Axceleon™

EnFuzion3D™ 2015

Installation Guide

For Windows® Users

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EnFuzion3D™ 2015 Installation Guide for Windows® Users
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Chapter 1

1 Introduction

Welcome to EnFuzion3D render farm management software!

This guide describes the process of installing and running EnFuzion3D on a render farm. This guide is organized as follows:

- ***Chapter 1 - Introduction***
- ***Chapter 2 - Overview of an EnFuzion3D Managed Render Farm***
  This chapter introduces EnFuzion3D concepts and terminology, along with a recommended way to set up EnFuzion3D managed render farms.
- ***Chapter 3 – Quick Start Guide - Setting up a One-machine Render Farm***
  This Chapter describes the quickest way to test-drive EnFuzion3D by creating a one-machine render farm as described in Chapter 2.
- ***Chapter 4 – Installing EnFuzion3D on the Windows Platform***
  This chapter describes the steps to install and configure EnFuzion3D on a Windows based production render farm.
- ***Chapter 5 – Setting up File Sharing***
  This chapter describes the steps to set up simple file sharing or a shared file repository for your render farm.
- ***Chapter 6 - Upgrading a Previous Installation of EnFuzion3D***
  This Chapter tells you how to upgrade an existing installation of EnFuzion3D. All current users of EnFuzion3D should consult this chapter before performing an upgrade.

Chapter 2

2 Overview of an EnFuzion3D Managed Render Farm

This chapter introduces EnFuzion3D concepts and terminology, along with a recommended way to set up EnFuzion3D managed render farms.

2.1 Key Components of an EnFuzion3D Managed Render Farm

A typical EnFuzion3D managed render farm is illustrated in ***Figure 2-1***.

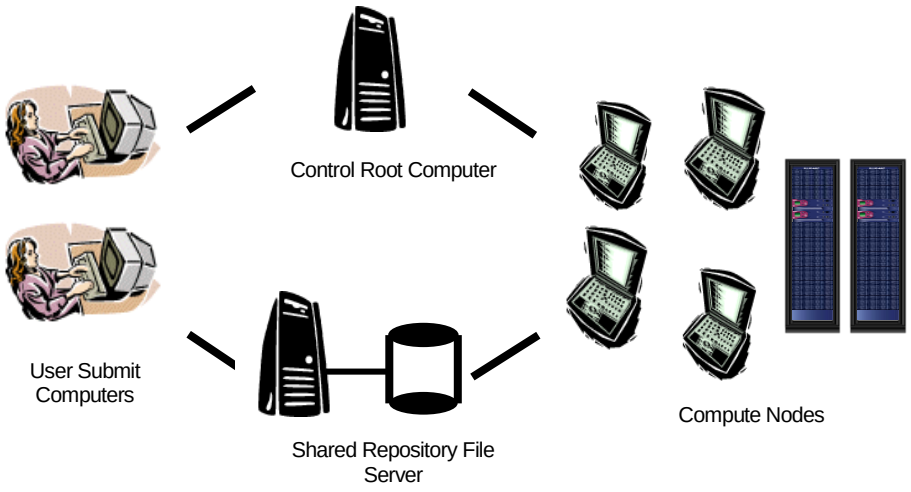

Figure 2-1: A typical EnFuzion3D Managed Render Farms

Key components of an EnFuzion3D managed render farm are:

- ***User Submit Computers*** – These are desktop machines that artists use to create scenes. You can have as many of these as you need. Your EnFuzion3D license does not limit the number of these computers.

- ***Control Root Computer*** – For optimal performance, it is recommended that you dedicate one machine per render farm to serve as the ***Control Root Computer***. This computer controls all EnFuzion3D activities on the render farm. This machine is also where your EnFuzion3D license file is installed.

- ***Compute Nodes*** – These are the worker machines, dedicated or shared, that make up your render farm, and do the rendering. Your EnFuzion3D license file sets the maximum number of the Compute Nodes you can have.

- ***A Shared Repository File Server*** – All your rendering project files must be stored in a shared file repository that is accessible by all the ***Compute Nodes*** and by all the ***User Submit Computers.*** The ***Shared Repository File Server*** is the computer that stores the repository of project files. You can have one or more ***Files Servers*** and ***Shared File Repositories*** on an EnFuzion3D managed render farm.

2.2 Mixed-OS Render Farm Support

EnFuzion3Dsupports render farms with machines running different operating systems. Tested and supported components are indicated as ***Yes*** in the table below. You can freely mix these components on your render farm, e.g. submit scenes from Windows machines to render nodes that run Linux. Please refer to the installation guides for Linux and Mac OS X users for instructions on how to install and configure EnFuzion3D on those operating systems platforms.

IMPORTANT: Please note EnFuzion3D cannot distribute rendering to an OS platform that is unsupported by your rendering package. Please verify that the render package you use is supported on the OS platform that you chose.

	Submit Computers	**Control Root Computer**	**Compute Nodes**
Windows (Windows 7, Windows 8, Windows Server 2008 R2)	Yes	Yes	Yes
Linux (Red Hat 7.3, Novell SUSE Linux 9 or Newer)	Yes	Yes	Yes
MAC OS X (10.7, 10.8 or Newer)	Yes	Yes	Yes

Table 2-1: EnFuzion3D Supported Configurations

2.3 How does EnFuzion3D work?

Figure 2-2 below shows a typical multi-user, server-based, EnFuzion3D managed render farm.

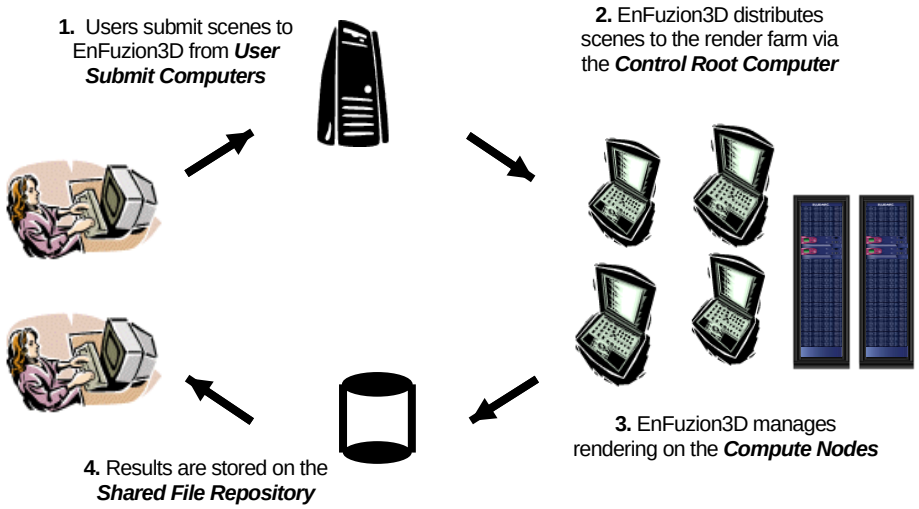
1. Users submit scenes to EnFuzion3D from *User Submit Computers*
2. EnFuzion3D distributes scenes to the render farm via the *Control Root Computer*
3. EnFuzion3D manages rendering on the *Compute Nodes*
4. Results are stored on the *Shared File Repository*

Figure 2-2: EnFuzion3D Managed Render Farm

2.4 How do I start?

Start small, test as you go. Follow these simple steps below to set up your render farm.

Step 1: Set up a ***one-machine render farm*** as shown in ***Figure 2-3***. This is the quickest way for you to test-drive EnFuzion3D.

You can skip this step if you are familiar with EnFuzion3D, or if you are an experienced render farm manager.

Figure 2-3: A one machine Render Farm

Step 2: Create a miniature ***Three-machine Render Farm*** by creating a ***Control Root Computer***, and adding 1 ***User Submit Machine*** and 1 ***Compute Node Machine, as*** shown in ***Figure 2-14***.

Before you add any more users or machines to your render farm, it is critical that you can successfully render some scenes on this miniature render farm. Networking and file systems problems are easier to spot and resolve at this stage. If this configuration doesn't work perfectly, adding more machines and more users will create more confusion at this stage.

Step 3: Add more render nodes and users to your render farm after you have successfully completed Step 3.

Figure 2-4: Three-machine Minimal Render Farm

2.5 Next Steps

If you are installing EnFuzion3D for the first time, please proceed to ***Chapters 3 Installing EnFuzion3D on Windows Platform*** for instructions on how to install and configure EnFuzion3D on Windows platform.

If you are upgrading your current version of EnFuzion3D, please proceed to ***Chapter 5 Upgrading a Previous Installation of EnFuzion3D***.

Chapter 3

3 EnFuzion3D Quick Start Guide: Setting up a One-machine Render Farm

This Chapter describes the quickest way to test-drive EnFuzion3D by creating a ***One-Machine Render Farm***.

This will only take a few minutes. If you are new to EnFuzion3D, we strongly suggest you start here. Skip ahead if you are an experience render farm administrator.

3.1 Computers, Users, and User Privilege

EnFuzion3D uses Windows Services to implement control and communications between the ***Control Root Computer*** and ***Compute Nodes***. EnFuzion3D therefore requires administrative privilege to install and execute on the ***Control Root Computers*** and ***Compute Nodes***.

On the ***Compute Nodes***, EnFuzion3D must have the same environment settings as the rendering software it calls to do the actual rendering. The easiest way to make sure is to install and run EnFuzion3D using the same user as what you used to install and run your rendering software.

Please make sure to follow the requirements in ***Table 3-1*** to install EnFuzion3D.

	One-Machine Configuration	Control Root Computer	User Submit Computer	Compute Nodes
Log in as this user to install EnFuzion3D	Administrator	Administrator	The normal artist user	The same user that you used to install and run your rendering software, e.g. Maya
User Privilege, required to install	Administrator	Administrator	User	Administrator
EnFuzion3D will execute as this user	Administrator	Administrator	User	The same user that you used to install and run your rendering software, e.g. Maya

Table 3-1: Installation Requirements

3.2 Windows User Access Control (UAC) Settings

By meeting the requirements on user privilege settings in ***Table 3-1***, you will be able to run EnFuizon3D with the ***Windows User Access Control*** setting at ***any*** level.

3.3 Windows Firewall Settings

EnFuzion3D runs on a client-server architecture to ensure high performance and scalability. All the ***Compute Nodes*** must be able to communicate with the EnFuzion3D ***Control Root Computer***, which they do by running a service called ***enfStarterSvc.exe***.

On all ***Compute Nodes***, in Windows firewall settings please make sure to set up the following:

- Allow the program ***<EnFuzion3D_Installation-Directory> \EnFuzion\Bin\enfStarterSvc.exe*** to accept inbound connections, and
- Make sure that this program can use ports 17000-17005

3.4 Run EnFuzion3D Installer as a Windows Administrator

Follow these steps ***exactly*** to make sure that you install EnFuzion3D as a Windows ***Administrator***.

- Identify the user account that your rendering software is installed under; login as that user.
- Copy the EnFuzion download image to this machine
- Extract the ***EnFuzion3D Installer***

Right Click➔ Extract All

- Open the ***EnFuzion3D Installer***

Right Click➔ Open

- Run the ***EnFuzion3D Installer*** using ***Run as administrator, as shown in Figure 3-1.***

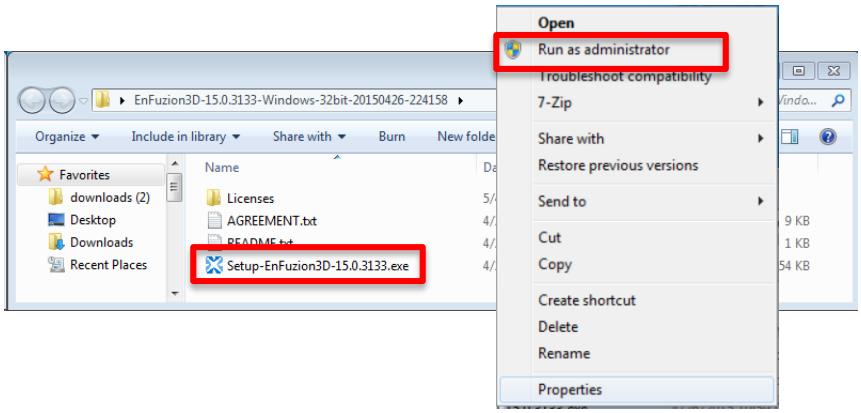

Figure 3-1: Install EnFuzion3D as Windows Administrator

This will open the ***EnFuzion3D Setup Wizard***, and let you install EnFuzion3D with administrative privilege.

3.5 Installing a One-machine Render Farm

Follow these steps below to install EnFuzion3D on your ***One-machine Render Farm***.

Step 1: Select the ***Test Install on One Computer*** option, and accept all the default values as shown in ***Figure 3-2***.

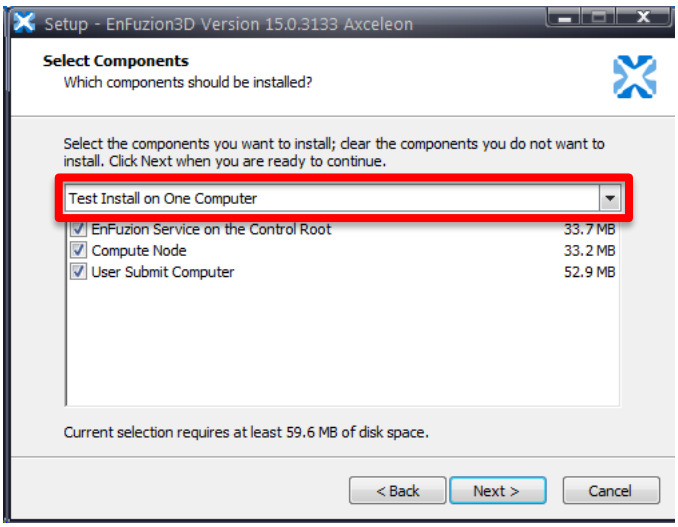
Setup - EnFuzion3D Version 15.0.3133 Axceleon
Select Components
Which components should be installed?
Select the components you want to install; clear the components you do not want to install. Click Next when you are ready to continue.
Test Install on One Computer
EnFuzion Service on the Control Root 33.7 MB
Compute Node 33.2 MB
User Submit Computer 52.9 MB
Current selection requires at least 59.6 MB of disk space.
< Back
Next >
Cancel

Figure 3-2: Test Installation on One Computer

Step 2: When prompted to provide an ***EnFuzion3D License File***, browse to locate your ***enflicense.txt*** file.

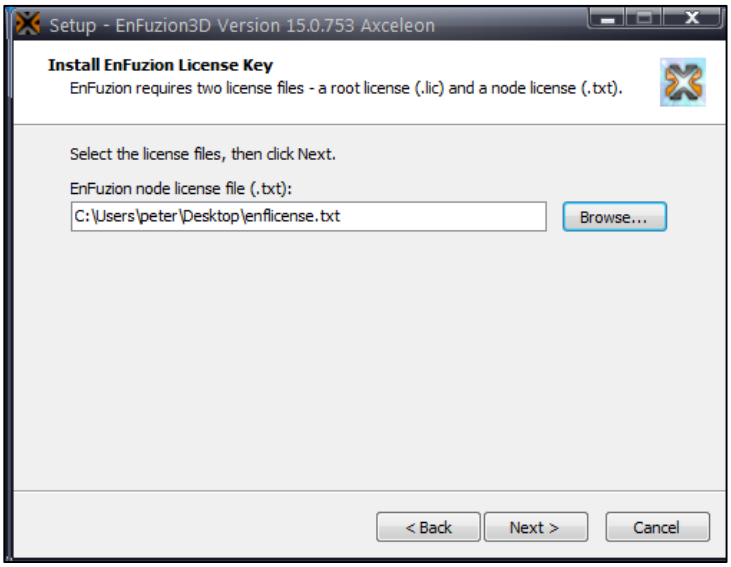
Setup - EnFuzion3D Version 15.0.753 Axceleon
Install EnFuzion License Key
EnFuzion requires two license files - a root license (.lic) and a node license (.txt).
Select the license files, then click Next.
EnFuzion node license file (.txt):
C:\Users\peter\Desktop\enflicense.txt
Browse...
< Back
Next >
Cancel

Figure 3-3: EnFuzion3D License File

Step 3: When prompted for ***User Name*** and ***Password*** as shown in ***Figure 3-4***, enter the same user as what your rendering software packages use.

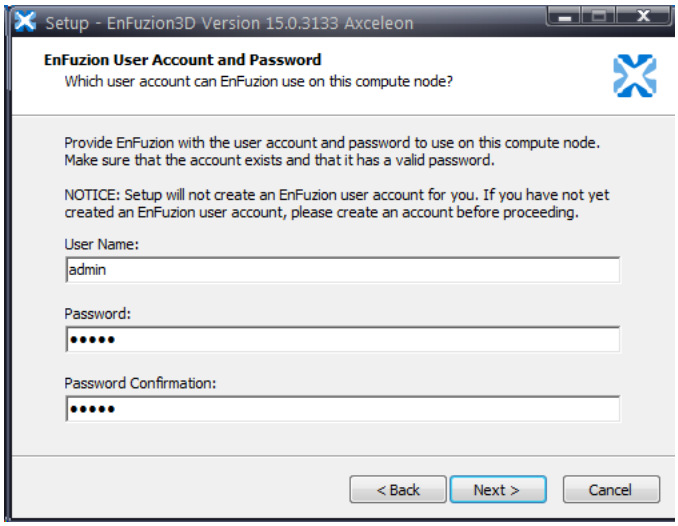
Setup - EnFuzion3D Version 15.0.3133 Axceleon
EnFuzion User Account and Password
Which user account can EnFuzion use on this compute node?
Provide EnFuzion with the user account and password to use on this compute node.
Make sure that the account exists and that it has a valid password.
NOTICE: Setup will not create an EnFuzion user account for you. If you have not yet created an EnFuzion user account, please create an account before proceeding.
User Name:
admin
Password:
Password Confirmation:
< Back
Next >
Cancel

Figure 3-4: Create User Name and Password for EnFuzion3D

Step 5: Take the default configuration settings for ***Compute Node*** and ***Submit Computer*** as shown in ***Figure 3-5***. Do not change these settings.

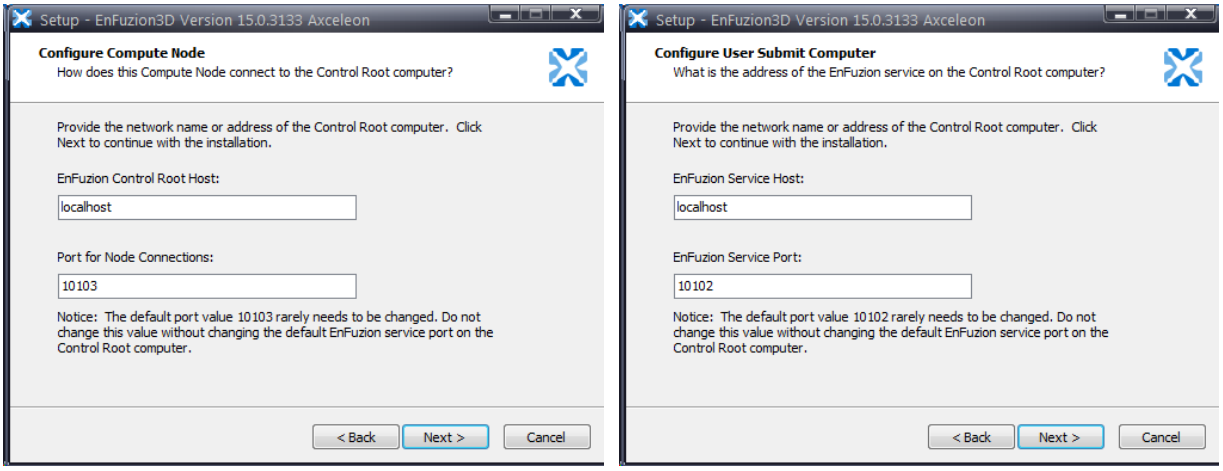
Setup - EnFuzion3D Version 15.0.3133 Axceleon
Configure Compute Node
How does this Compute Node connect to the Control Root computer?
Provide the network name or address of the Control Root computer. Click Next to continue with the installation.
EnFuzion Control Root Host:
localhost
Port for Node Connections:
10103
Notice: The default port value 10103 rarely needs to be changed. Do not change this value without changing the default EnFuzion service port on the Control Root computer.
< Back
Next >
Cancel
Setup - EnFuzion3D Version 15.0.3133 Axceleon
Configure User Submit Computer
What is the address of the EnFuzion service on the Control Root computer?
Provide the network name or address of the Control Root computer. Click Next to continue with the installation.
EnFuzion Service Host:
localhost
EnFuzion Service Port:
10102
Notice: The default port value 10102 rarely needs to be changed. Do not change this value without changing the default EnFuzion service port on the Control Root computer.
< Back
Next >
Cancel

Figure 3-5: Default Configurations

Step 6: Proceed with the installation.

If you encounter the error message as shown in ***Figure 3-6***, it is because a previously installed EnFuzion process is still running on this machine. You need to stop it before proceeding. You can stop this process from the ***Windows Task Manager***.

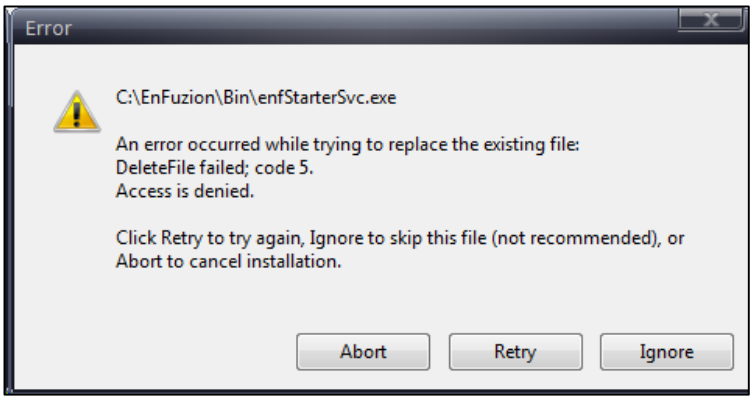
Error
C:\EnFuzion\Bin\enfStarterSvc.exe
An error occurred while trying to replace the existing file:
DeleteFile failed; code 5.
Access is denied.
Click Retry to try again, Ignore to skip this file (not recommended), or Abort to cancel installation.
Abort
Retry
Ignore

Figure 3-6: Previous Installation of EnFuzion3D Detected

It is a good idea to stop ***all*** running EnFuzion processes using the ***Windows Task Manager*** before you install a new version of EnFuzion3D. All the EnFuzion processes are shown in ***Figure 3-7*** below. More details on how to upgrade an existing installation are in ***Chapter 5 Upgrading a Previous Installation of EnFuzion3D***.

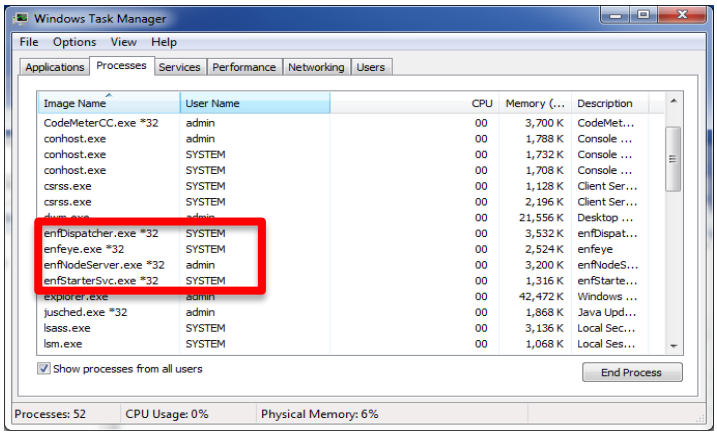
Windows Task Manager
File Options View Help
Applications Processes Services Performance Networking Users
Image Name User Name CPU Memory (... Description
CodeMeterCC.exe *32 admin 00 3,700 K CodeMet...
conhost.exe admin 00 1,788 K Console ...
conhost.exe SYSTEM 00 1,732 K Console ...
conhost.exe SYSTEM 00 1,708 K Console ...
csrss.exe SYSTEM 00 1,128 K Client Ser...
csrss.exe SYSTEM 00 2,196 K Client Ser...
dwm.exe admin 00 21,556 K Desktop ...
enfDispatcher.exe *32 SYSTEM 00 3,532 K enfDispat...
enfeye.exe *32 SYSTEM 00 2,524 K enfeye
enfNodeServer.exe *32 admin 00 3,200 K enfNodeS...
enfStarterSvc.exe *32 SYSTEM 00 1,316 K enfStarte...
explorer.exe admin 00 42,472 K Windows ...
jusched.exe *32 admin 00 1,868 K Java Upd...
lsass.exe SYSTEM 00 3,136 K Local Sec...
lsm.exe SYSTEM 00 1,068 K Local Ses...
Show processes from all users
End Process
Processes: 52 CPU Usage: 0% Physical Memory: 6%

Figure 3-7: Stop Previously Installed Processes

Step 7: Complete the installation by taking all the default values as shown in ***Figure 3-8*** and click ***Finish***.

Setup - EnFuzion3D Version 15.0.3133 Axceleon
Completing the EnFuzion3D Setup Wizard
Setup has finished installing and configuring EnFuzion3D on your computer.
Click Finish to perform the tasks below and exit Setup.
Register EnFuzion Control Root Service
Start EnFuzion Control Root Service
Start EnFuzion Compute Node
Connect a Web Browser to the EnFuzion Service
EnFuzion3D
axceleon
Finish

Figure 3-8: Installation Complete

Congratulations! You have just set up a one-machine render farm! Now you will see the ***EnFuzion Web Interface*** that shows the status of your render farm, as shown in ***Figure 3-9***.

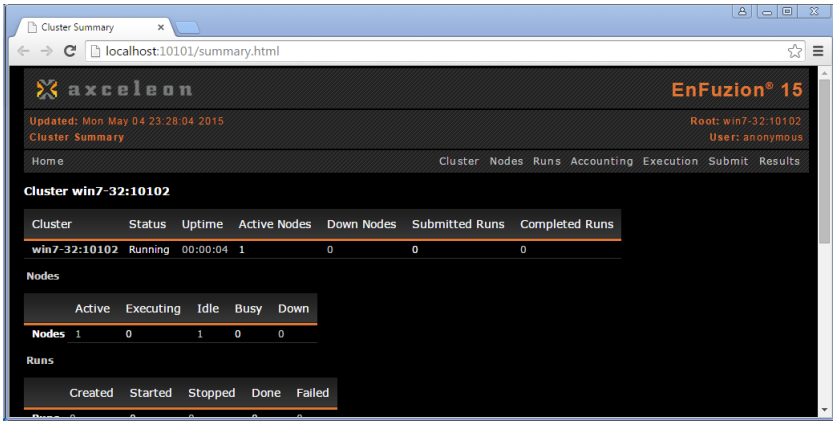

Figure 3-9: One-machine Render Farm Running

From the ***EnFuzion Web Interface*** you can see that:

- You have 1 ***Cluster***
- You have 1 ***Active Node,*** which is ***Idle***
- You have 0 ***Runs***

This shows that your ***One-machine Render Farm*** is active but idling, waiting for ***Jobs*** to run.

You can start the EnFuzion3D Desktop from ***Windows Start➔EnFuaion3D Desktop***, as shown in ***Figure 3-10***.

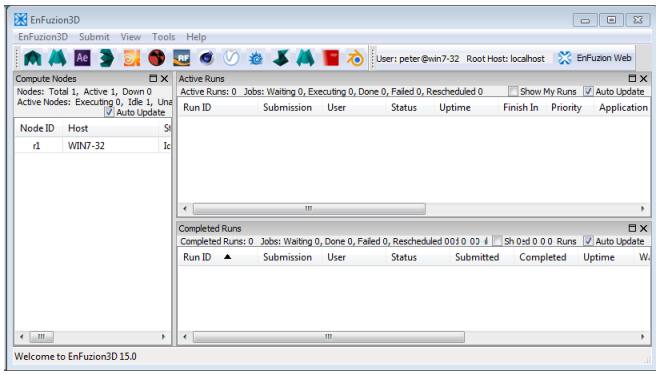
EnFuzion3D
EnFuzion3D Submit View Tools Help
User: peter@win7-32 Root Host: localhost
EnFuzion Web
Compute Nodes
Nodes: Total 1, Active 1, Down 0
Active Nodes: Executing 0, Idle 1,
Auto Update
Node ID Host
r1 WIN7-32
Active Runs
Active Runs: 0 Jobs: Waiting 0, Executing 0, Done 0, Failed 0, Rescheduled 0
Show My Runs
Auto Update
Run ID Submission User Status Uptime Finish In Priority Application
Completed Runs
Completed Runs: 0 Jobs: Waiting 0, Done 0, Failed 0, Rescheduled
Auto Update
Run ID Submission User Status Submitted Completed Uptime
Welcome to EnFuzion3D 15.0

Figure 3-10: EnFuzion3D Desktop

3.6 Troubleshooting Installation Problems

This section describes some common installation problems and how to overcome them.

3.6.1 Error Messages During Installation

When you did not have ***administrative privilege*** or did not install EnFuzion3D using the ***Run as administrator*** as suggested, you may encounter one of more of the following error messages below:

```
Unable to execute file C:\EnFuzion3d\bin\enfstartup
CreateProcess failed; Code 740.
The requested operation requires elevation.

Unable to execute file C:\EnFuzion3d\bin\enfstartup
CreateProcess failed; Code 740.
The requested operation requires elevation.

Unable to execute file C:\EnFuzion3d\bin\enfnodescp
CreateProcess failed; Code 740.
The requested operation requires elevation.
```

When this happens, we suggest you re-install EnFuzion3D as an administrator, or using the ***Run as administrator*** as required.

You can also try manually starting these EnFuzion processes manually by following the steps in the sections below.

3.6.2 The EnFuzion3D Web Interface Does Not Start

When the ***EnFuzion Web Interface*** at ***http://localhost:10101*** doesn't start, you should check the ***EnFuzion Root Service Log*** file first to see the reason, and then take the appropriate corrective actions.

To access the ***EnFuzion Root Service Log*** file, choose ***Window Start➔EnFuzion3D➔All Programs➔ Show EnFuzion Root Service Log***, as shown in ***Figure 3-11***.

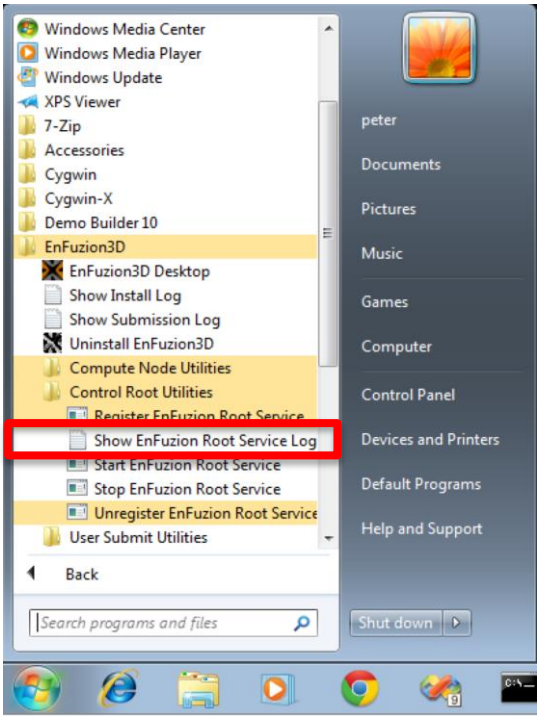

Figure 3-11: Accessing EnFuzion Root Service Log

3.6.3 Manually Starting the EnFuzion Root Service

The ***EnFuzion Web Interface*** at ***http://localhost:10101*** will not start if the ***EnFuzion Control Root*** processes ***enfDispatcher*** and ***enfeye*** did not start successfully. You can confirm this from the ***Windows Task Manager***.

You can manually start these processes by choosing the following, as shown in ***Figure 3-12***:

- ***Windows Start➔All Programs➔EnFuzion3D➔Control Root Utilities➔Register EnFuzion Root Service***, and
- ***Windows Start➔All Programs➔EnFuzion3D➔Control Root Utilities➔Register EnFuzion Root Service***

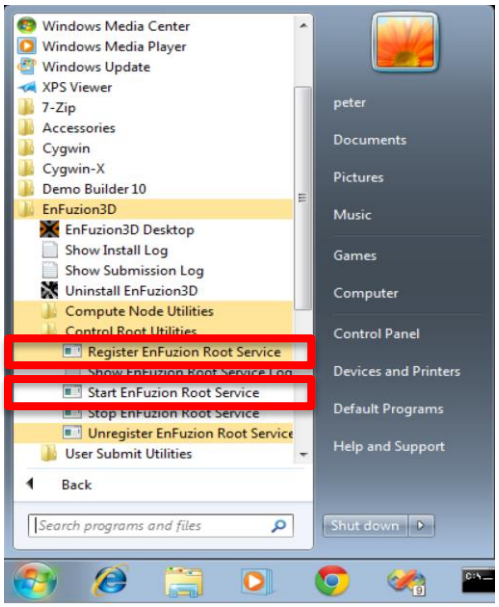

Figure 3-12: Manually Starting EnFuzion Root Service

After you manually start the ***EnFuzion Root Service***, you can try re-open the ***EnFuzion Web Interface*** by opening a browser, and type in ***http://localhost:10101.***

3.6.4 The Web Interface Shows 0 Active Nodes

When the ***EnFuzion Web Interface*** shows 0 ***Active Nodes***, you should first check the ***EnFuzion Node Service Log*** to see the reason, and then take the appropriate corrective actions.

To access the ***EnFuzion Node Service Log*** file, choose ***Window Start➔EnFuzion3D➔All Programs➔ Show EnFuzion Node Service Log***, as shown in ***Figure 3-13***.

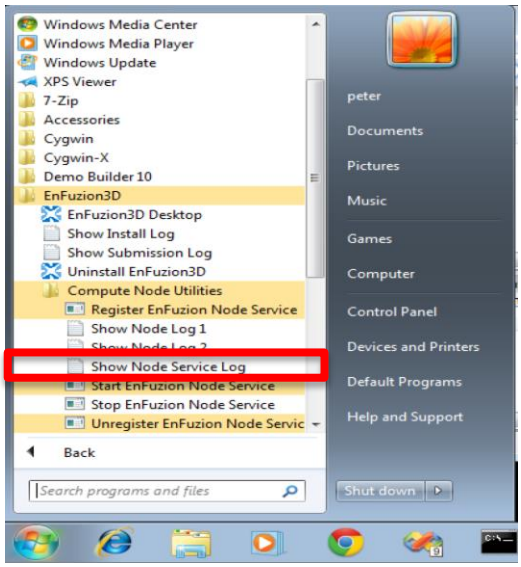

Figure 3-13: Accessing EnFuzion Node Service Log

3.6.5 Manually Starting the EnFuzion Node Service

The ***EnFuzion Web Interface*** at ***http://localhost:10101*** will show 0 ***Active Nodes*** if the ***EnFuzion Compute Node*** processes, ***enfNodeServer*** and ***enfStarterSvc*** did not start successfully. You can confirm this from the ***Windows Task Manager***.

You can manually start these processes by choosing the following, as shown in ***Figure 3-14***:

- ***Windows Start➔All Programs➔EnFuzion3D➔Compute Node Utilities➔Register EnFuzion Node Service***, and

- ***Windows Start➔All Programs➔EnFuzion3D➔ Compute Node Utilities➔Register EnFuzion Node Service***

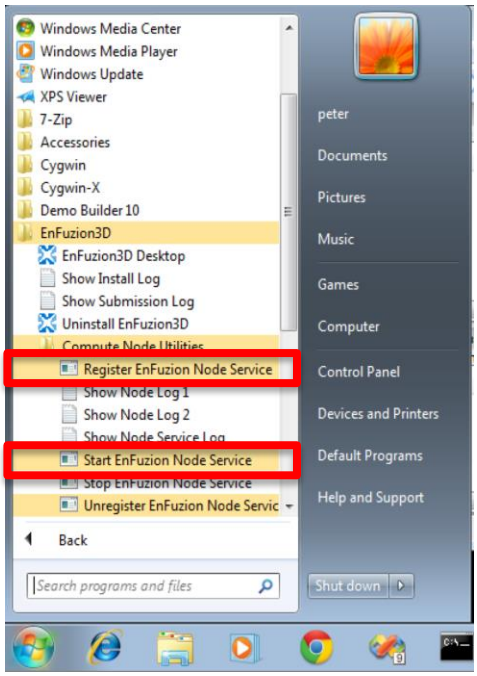

Figure 3-14: Manually Starting EnFuzion Node Service

After you manually start the ***EnFuzion Compute Node Service***, you can try re-open the ***EnFuzion Web Interface*** by opening a browser, and type in ***http://localhost:10101***, and check to see if you have 1 Act***ive Node***.

3.6.6 More Troubleshooting Tips

Most common installation problems are due to these reasons:

- You did not install EnFuzion3D as an administrator
- Invalid or expired license file
- Blocked TCP/IP port that EnFuzion needs
- Antivirus software preventing system processes from starting
- The EnFuzion3D program cannot log in on ***Compute Nodes*** using the password you supplied during the installation

EnFuzion3D keeps extensive ***Log Files*** to help you identify problems. We suggest you check the ***EnFuzion Root Service Log*** and ***Node Service Log*** files to identify the source of the problems.

More diagnostic tips and solutions for these problems can be found on-line, at ***http://www.enfuzion3D.com/faq.html***.

3.7 Test Drive EnFuzion3D

After you verify that EnFuzion3D is running, you're ready to take your one-machine render farm for a test drive.

The simple test here uses Maya 2015 to illustrate how EnFuzion3D works with rendering packages. Axceleon provides application plug-ins for EnFuzion3D for most popular rendering packages. By installing the EnFuzion3D software, you have installed all the supported plug-ins. To get full information on the application plug-ins for EnFuzion3D, please consult the ***EnFuzion3D User Guide.***

Follow these steps to take your one-machine render farm on a test drive.

Step 1: Start **EnFuzion3D Desktop** and Select Maya as shown in ***Figure 3-11***.

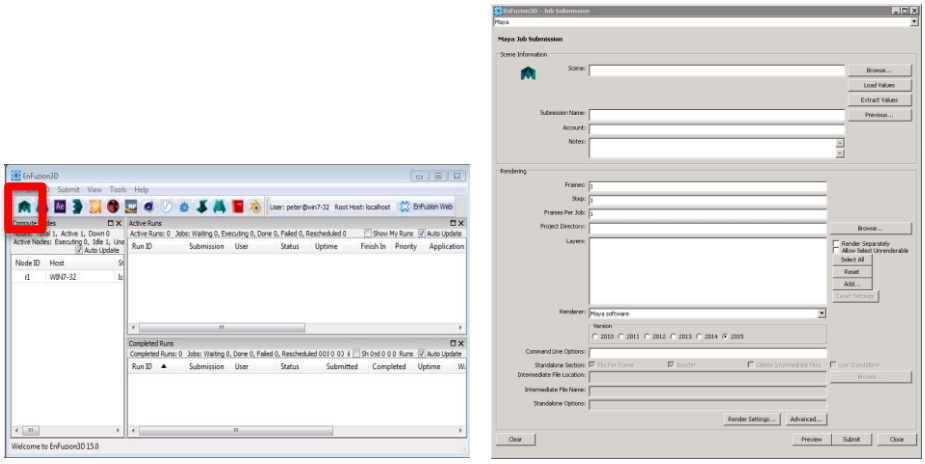

Figure 3-15: EnFuzion3D Desktop and Maya Job Submission Interface

Step 2*:** Use a ***Scene you have successfully rendered before, fill out the ***Job Submission Parameters***.

- Provide Scene, Project Directory and Frames information
- Click ***Render Settings*** as shown in ***Figure 3-12*** to set the ***Image Directory***, which is the destination of rendered images. Click on ***Apply*** to continue.
- Click ***Submit*** to submit the scene

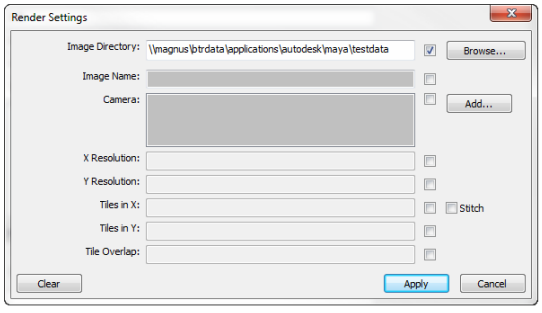

Figure 3-16: Enter Render settings

Each submission corresponds to an EnFuzion3D ***Active Run*** with its own ***Run ID***, as shown in ***Figure 3-15***. You monitor the rendering progress using the ***EnFuzion3D Desktop***.

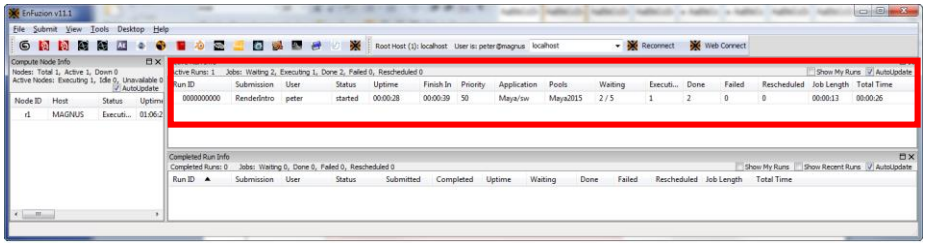

Figure 3-17: Monitoring Rendering Progress

Once rendering completes, an ***Active Run*** become a ***Completed Run***, as shown in ***Figure 3-16.*** You can get more information on by clicking on the ***Run ID*** of your ***Run***.

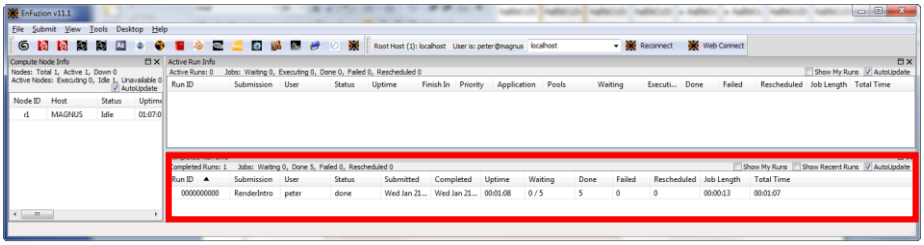

Figure 3-18: View Completed Run Information

For more information on how to use the ***EnFuzion3D Desktop*** consult the ***EnFuzion3D User Guide***.

3.8 Next Steps

Once you have succeeded at setting up a one-machine render farm, you are ready to set up your production render farm. Proceed to Chapter 4 for directions.

Chapter 4

4 Setting up an EnFuzion3D Managed Render Farm

This chapter explains the steps to plan, set up and configures an EnFuzion3D managed production render farm.

4.1 EnFuzion3D Software Installation Order

The recommended order to install EnFuzion3D on a render farm is as follows:

- Install the ***Control Root Computer*** first
- Add one **User Submit Computer** and one ***Render Node***
- Set up a shared file system for your render farm
- Test the ***Three-machine Render Farm*** to make sure you can successful render some images
- Add more User ***Submit Computers*** and ***Render Nodes***, test as you go

4.2 Computers, Users, and User Privilege

EnFuzion3D uses Windows Services to implement control and communications between the ***Control Root Computer*** and ***Compute Nodes***. EnFuzion3D therefore requires administrative privilege to install and execute on the ***Control Root Computers*** and ***Compute Nodes***.

On the ***Compute Nodes***, EnFuzion3D must have the same environment settings as the rendering software it calls to do the actual rendering. The easiest way to make sure is to install and run EnFuzion3D using the same user as what you used to install and run your rendering software.

Please make sure to follow the requirements in ***Table 4-1*** to install EnFuzion3D.

	Control Root Computer	**User Submit Computer**	**Compute Nodes**
Log in as this user to install EnFuzion3D	Administrator	The normal artist user	The same user that you used to install and run your rendering software, e.g. Maya

	Control Root Computer	User Submit Computer	Compute Nodes
User Privilege, required to install	Administrator	User	Administrator
EnFuzion3D will execute as this user	Administrator	User	The same user that you used to install and run your rendering software, e.g. Maya

Table 4-1: Installation Requirements

4.3 Windows User Access Control (UAC) Settings

By meeting the requirements on user privilege settings in ***Table 3-1***, you will be able to run EnFuizon3D with the ***Windows User Access Control*** setting at ***any*** level.

4.4 Windows Firewall Settings

EnFuzion3D runs on client-server architecture to ensure high performance and scalability. All the ***Compute Nodes*** must be able to communicate with the EnFuzion3D ***Control Root Computer***, which they do by running a service called ***enfStarterSvc.exe***.

On all ***Compute Nodes***, in Windows firewall settings please make sure to set up the following:

- Allow the program ***<EnFuzion3D_Installation-Directory> \EnFuzion\Bin\enfStarterSvc.exe*** to accept inbound connections, and
- Make sure that this program can use ports 17000-17005

4.5 About the Control Root Computer

The ***Control Root Computer*** is the control and command center of your render farm. You must ensure that this computer meets the follow requirements:

- Each render farm has only **ONE *Control Root Computer***
- The ***Control Root Computer*** must be able to ***run continuously without disruption***
- The ***Control Root Computer*** must have a ***fixed IP address***. You cannot use DHCP to allocate different IP addresses for the ***Control Root Computer***
- The ***Control Root Computer*** should have at least 100MB of local disk space to hold

4.6 Run EnFuzion3D Installer as a Windows Administrator

Follow these steps ***exactly*** to make sure that you install EnFuzion3D as a Windows ***Administrator***.

- Identify the user account that your rendering software is installed under; login as that user.
- Copy the EnFuzion download image to this machine
- Extract the ***EnFuzion3D Installer***

Right Click➔ Extract All

- Open the ***EnFuzion3D Installer***

Right Click➔ Open

- Run the ***EnFuzion3D Installer*** using ***Run as administrator, as shown in Figure 4-1.***

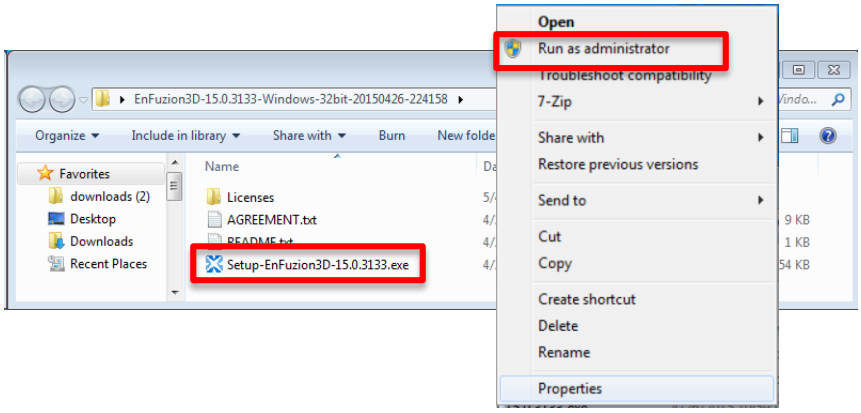

Figure 4-1: Install EnFuzion3D as Windows Administrator

This will open the ***EnFuzion3D Setup Wizard***, and let you install EnFuzion3D with administrative privilege.

4.7 Installing EnFuzion3D on the Control Root Computer

Follow these steps below to install EnFuzion3D on the ***Control Root Computer***.

Step 1: Select your ***Control Root Computer*** and note its Fixed IP Address.

Step 2: Run the EnFuzion 3D setup program as an Administrator by following these steps exactly:

- Identify the user account that your rendering software is installed under; login as that user.
- Copy the EnFuzion download image to this machine
- Extract the ***EnFuzion3D Installer***

Right Click➔ Extract All

- Open the ***EnFuzion3D Installer***

Right Click➔ Open

- Run the ***EnFuzion3D Installer*** using ***Run as administrator, as shown in Figure 4-2.***

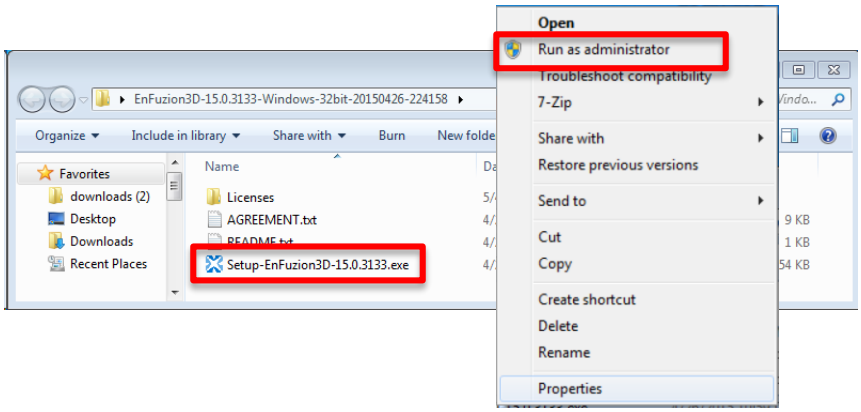

Figure 4-2: Install EnFuzion3D as Windows Administrator

This will open the ***EnFuzion3D Setup Wizard***, and let you install EnFuzion3D with administrative privilege.

Step 3: Select the ***Control Root Installation*** option in the ***EnFuzion3D Setup Wizard***, as shown in ***Figure 4-3***.

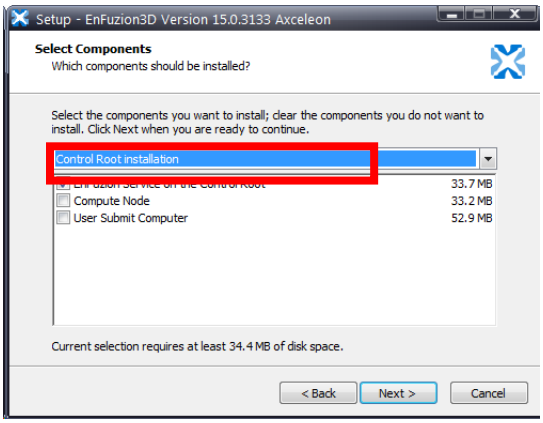
Setup - EnFuzion3D Version 15.0.3133 Axceleon
Select Components
Which components should be installed?
Select the components you want to install; clear the components you do not want to install. Click Next when you are ready to continue.
Control Root installation
33.7 MB
Compute Node
33.2 MB
User Submit Computer
52.9 MB
Current selection requires at least 34.4 MB of disk space.
< Back
Next >
Cancel

Figure 4-3: Control Root Installation

Step 4: Take the default setting on ***Register and Start EnFuzion Service*** option, as shown in ***Figure 4-4*** so that the ***EnFuzion Root Service*** will start automatically after the installation is complete.

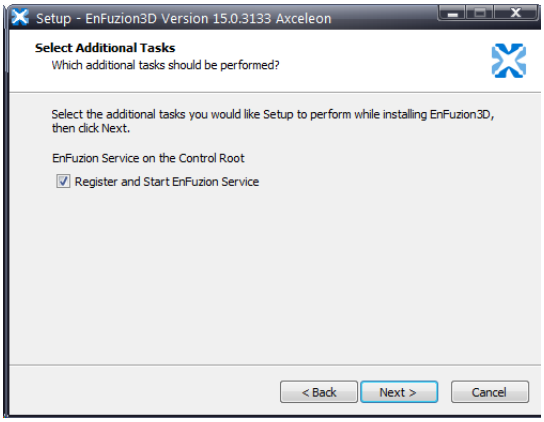
Setup - EnFuzion3D Version 15.0.3133 Axceleon
Select Additional Tasks
Which additional tasks should be performed?
Select the additional tasks you would like Setup to perform while installing EnFuzion3D, then click Next.
EnFuzion Service on the Control Root
Register and Start EnFuzion Service
< Back
Next >
Cancel

Figure 4-4: Configure Control Root Service

If you encounter an error message as shown in ***Figure 4-5***, it is because a previously installed ***EnFuzion Root Service*** process is still running on this machine. You need to stop it before proceeding. You can stop this process from the ***Windows Task Manager***.

It is a good idea to stop all running EnFuzion processes using the ***Windows Task Manager*** before you install a new version of EnFuzion3D. All the EnFuzion processes are shown in ***Figure 4-6*** below. More details on how to upgrade an existing installation are in ***Chapter 6 Upgrading a Previous Installation of EnFuzion3D***.

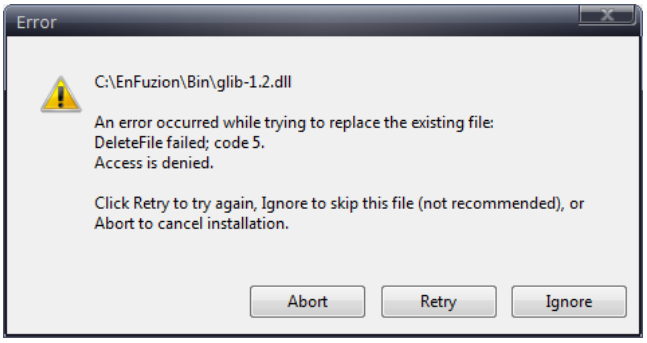

Figure 4-5: Stop Previously Installed Processes

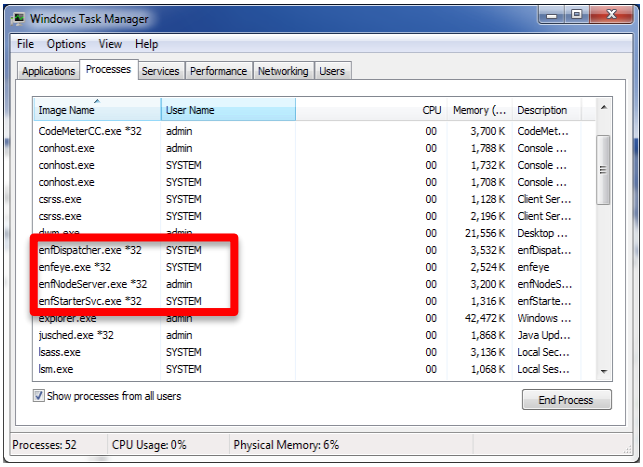
Windows Task Manager
File Options View Help
Applications Processes Services Performance Networking Users
Image Name User Name CPU Memory (... Description
CodeMeterCC.exe *32 admin 00 3,700 K CodeMet...
conhost.exe admin 00 1,788 K Console ...
conhost.exe SYSTEM 00 1,732 K Console ...
conhost.exe SYSTEM 00 1,708 K Console ...
csrss.exe SYSTEM 00 1,128 K Client Ser...
csrss.exe SYSTEM 00 2,196 K Client Ser...
dwm.exe admin 00 21,556 K Desktop ...
enfDispatcher.exe *32 SYSTEM 00 3,532 K enfDispat...
enfeye.exe *32 SYSTEM 00 2,524 K enfeye
enfNodeServer.exe *32 admin 00 3,200 K enfNodeS...
enfStarterSvc.exe *32 SYSTEM 00 1,316 K enfStarte...
explorer.exe admin 00 42,472 K Windows ...
jusched.exe *32 admin 00 1,868 K Java Upd...
lsass.exe SYSTEM 00 3,136 K Local Sec...
lsm.exe SYSTEM 00 1,068 K Local Ses...
Show processes from all users
End Process
Processes: 52 CPU Usage: 0% Physical Memory: 6%

Figure 4-6: EnFuzion Processes

Step 5: Browse to locate the ***EnFuzion3D*** license file when prompted.

Step 6: Finish the installation process by registering and starting the ***EnFuzion Root Services***, as the default values suggest. Click ***Finish*** to conclude ***Control Root Computer*** installation, as shown in ***Figure 4-7***.

Setup - EnFuzion3D Version 15.0.3133 Axceleon
Completing the
EnFuzion3D Setup Wizard
Setup has finished installing and configuring EnFuzion3D on your computer.
Click Finish to perform the tasks below and exit Setup.
Register EnFuzion Control Root Service
Start EnFuzion Control Root Service
EnFuzion3D
axceleon
Finish

Figure 4-7: Register and Start EnFuzion Root Service

Step 7: Open the ***EnFuzion Web Interface*** to verify that your ***Control Root Computer*** is running. To do this:

- Open a Web browser and enter ***http://<IP Address of your Control Root Computer>:10101***
- From the ***EnFuzion Web Interface***, click on ***Cluster***. The ***Status*** should show ***Running*** upon a successful installation. See ***Figure 4-8***.
- From the Windows Task Manager, you should see two new ***EnFuzion*** processes running, which are ***enfDispatcher.exe*** and ***enfeye.exe***.

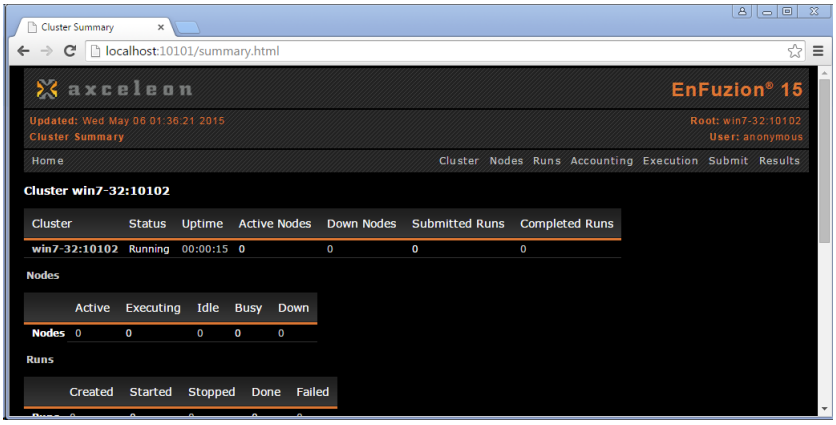

Figure 4-8: The EnFuzion Web Interface

If you cannot start the ***EnFuzion Web Interface***, or that the ***Cluster Status*** is not shown as ***Down***, please refer to Troubleshooting Installation Problems for troubleshooting tips. You should ***not*** proceed further until you can get ***EnFuzion Root Service*** running.

4.7.1 What to do next?

Once you have successfully installed a ***Compute Root Computer***, you can move on to add one ***User Submit Computer*** and one ***Compute Node***.

4.8 Installing EnFuzion3D on Artist Workstations (User Submit Computer)

Users of your render farm will submit scenes from their workstations. You must install the EnFuzion3D ***User Submit Computer*** software on all the user workstations. You can have as many of these machines as you need, because their number is not limited by your EnFuzion3D license.

Follow the steps below to install the ***User Submit Computer*** software on an artist workstation. Completing these steps will give the partial render farm shown in ***Figure 4-9***.

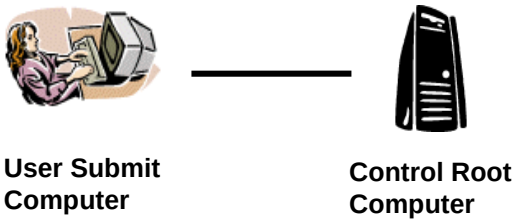

Figure 4-9: Adding a User Submit Computer

Step 1: Select a ***User Submit Computer***, login as the normal user of the workstation.

Step 2: Download the EnFuzion3D software and run the ***EnFuzion-Setup*** program as the normal user. Administrative rights are not needed. In the ***EnFuzion3D Setup Wizard***, select the ***User Submit Computer Installation*** option, as shown in ***Figure 4-10***.

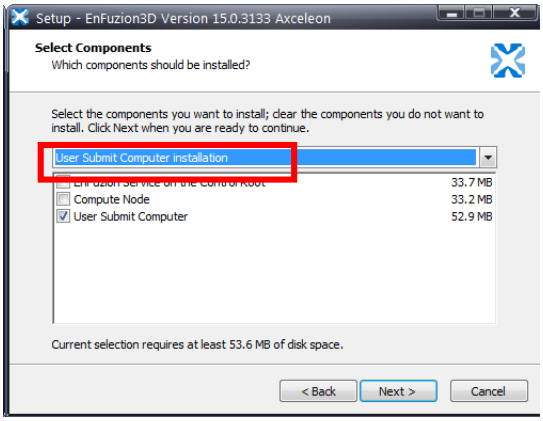
Setup - EnFuzion3D Version 15.0.3133 Axceleon
Select Components
Which components should be installed?
Select the components you want to install; clear the components you do not want to install. Click Next when you are ready to continue.
User Submit Computer installation
33.7 MB
Compute Node
33.2 MB
User Submit Computer
52.9 MB
Current selection requires at least 53.6 MB of disk space.
< Back
Next >
Cancel

Figure 4-10: Install and Configure a User Submit Computer

Step 3: When prompted to provide ***EnFuzion Service Host*** address, as shown in ***Figure 4-11***, provide the ***Fixed IP Address*** of the ***Control Root Computer*** of your render farm.

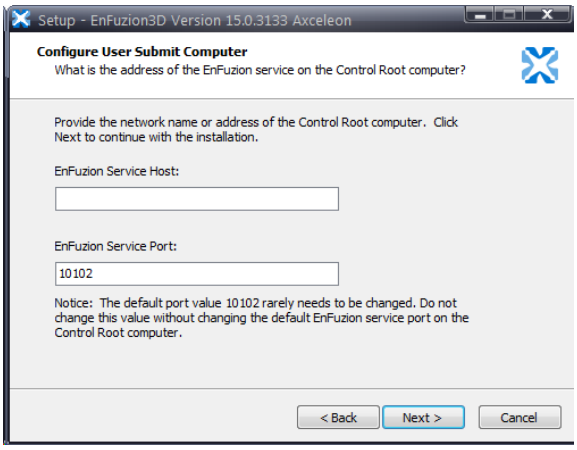
Setup - EnFuzion3D Version 15.0.3133 Axceleon
Configure User Submit Computer
What is the address of the EnFuzion service on the Control Root computer?
Provide the network name or address of the Control Root computer. Click Next to continue with the installation.
EnFuzion Service Host:
EnFuzion Service Port:
10102
Notice: The default port value 10102 rarely needs to be changed. Do not change this value without changing the default EnFuzion service port on the Control Root computer.
< Back
Next >
Cancel

Figure 4-11: Provide Control Root Computer address to a User Submit Computer

Step 5: Continue and finish installation by clicking on ***Next***. This completes the steps to install EnFuzion3D on an artist workstation.

4.8.1 What to do next?

If you are installing this for the first time, proceed to the next section to add one ***Compute Node*** to create a ***Three-Machine Render Farm***. You can read about the importance of this in ***Section 2.5 How do I start***.

After you have successfully rendered some scenes on your ***Three-Machine Render Farm, you can then go ahead to install EnFuzion3D on all the machines on your render farm.***

4.9 Installing EnFuzion3D on Compute Nodes

Compute Nodes are the workhorses of your render farm. You must install the EnFuzion3D ***Compute Node*** software on all of your ***Compute Nodes***. Your EnFuzion3D license determines on how many ***Compute Nodes*** you can run EnFuzion3D.

If you are installing EnFuzion3D for the first time, we suggest you install only one ***Compute Node*** to start, adding one ***Compute Node*** to the ***Control Root Machine*** and the ***User Submit Machine*** that you installed earlier will give you the minimal ***Three-Machine Render Farm, as shown in Figure 4-12.*** You can read about the importance of this in ***Section 2.5 How do I start.***

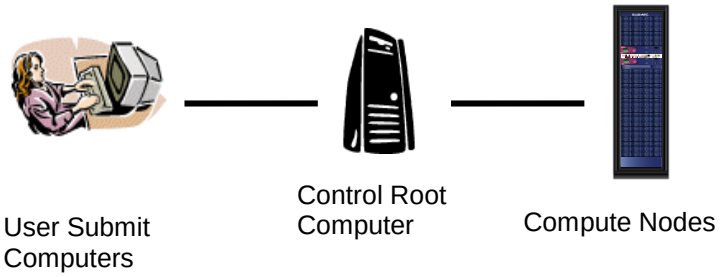

Figure 4-12: A typical EnFuzion3D Managed Render Farm

4.9.1 Installing Rendering Software on Compute Nodes

We suggest that you install your rendering software on your ***Compute Nodes*** before you EnFuzion3D. This way, EnFuzion3D will auto-detect your rendering applications and auto-configure itself accordingly.

4.9.2 Installing and Configuring an EnFuzion3D Compute Nodes

Follow these steps below to install EnFuzion3D on render nodes.

Step 1: Create a user account for EnFuzion3D to run on

EnFuzion3D requires a user account for it to run on ***Compute Nodes***. If you have installed rendering software on a ***Compute Node***, then you don't need to create a different user account for EnFuzion3D. EnFuzion3D should use the same user account as your rendering software.

Otherwise, follow instructions from Microsoft to create a new user account. Please remember to install rendering software using the same user afterwards.

The user account that EnFuzion3D uses on the ***Compute Node*** must have ***administrator privilege***.

> You ***must*** do this for every ***Compute Node*** on your render farm. Please complete this step before installing EnFuzion3D.

Step 2: Run EnFuzion3D setup program as an administrator by following these steps exactly

- Log in as the user discussed in the section above
- Copy the EnFuzion download image to this machine
- Extract the ***EnFuzion3D Installer***

Right Click➔ Extract All

- Open the ***EnFuzion3D Installer***

Right Click➔ Open

- Run the ***EnFuzion3D Installer*** using ***Run as administrator, as shown in Figure 4-13.***

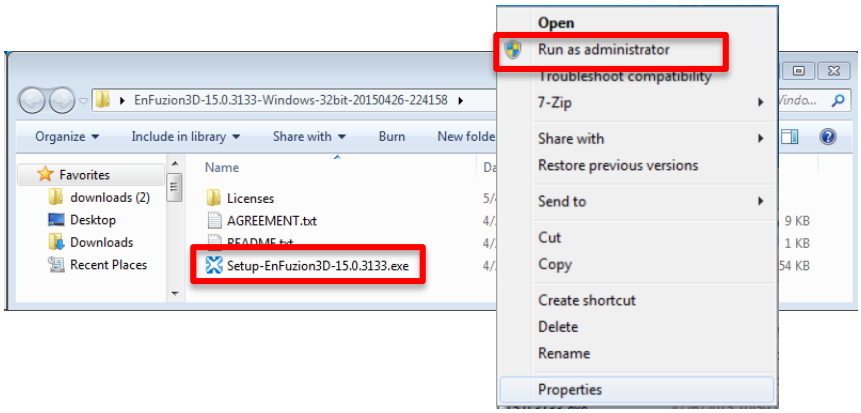

Figure 4-13: Install EnFuzion3D as Windows Administrator

This will open the ***EnFuzion3D Setup Wizard***, and let you install EnFuzion3D with administrative privilege.

Step 3: Select the ***Compute Node Installation*** option in the ***EnFuzion3D Setup Wizard***, as shown in ***Figure 4-14***.

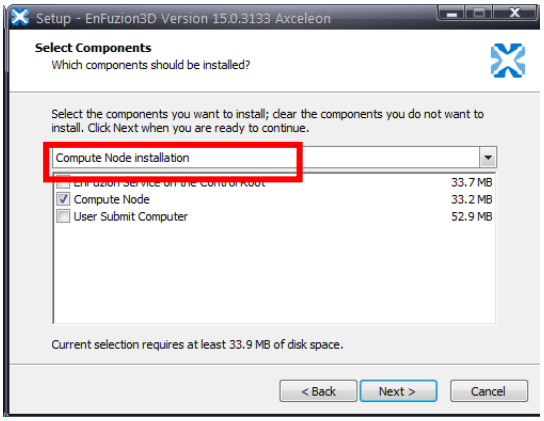
Setup - EnFuzion3D Version 15.0.3133 Axceleon
Select Components
Which components should be installed?
Select the components you want to install; clear the components you do not want to install. Click Next when you are ready to continue.
Compute Node installation
Compute Node 33.2 MB
User Submit Computer 52.9 MB
Current selection requires at least 33.9 MB of disk space.
< Back
Next >
Cancel

Figure 4-14: Install and Configure a Computer Node

Step 3: Provide the user account and a password that EnFuzion will use to run on this machine, as shown in ***Figure 4-15***.

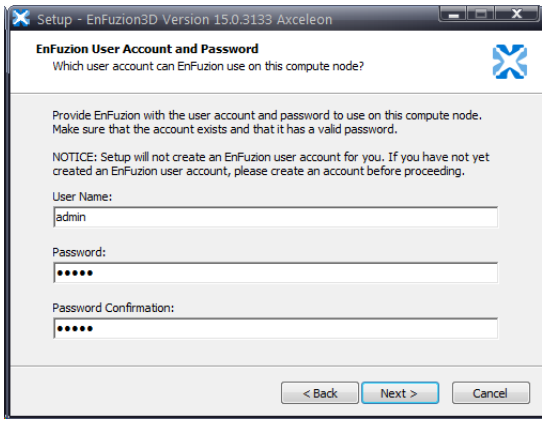
Setup - EnFuzion3D Version 15.0.3133 Axceleon
EnFuzion User Account and Password
Which user account can EnFuzion use on this compute node?
Provide EnFuzion with the user account and password to use on this compute node. Make sure that the account exists and that it has a valid password.
NOTICE: Setup will not create an EnFuzion user account for you. If you have not yet created an EnFuzion user account, please create an account before proceeding.
User Name:
admin
Password:
•••••
Password Confirmation:
•••••
< Back
Next >
Cancel

Figure 4-15: Provide User Name and Password for a Compute Node

Step 4: As shown in ***Figure 4-16***, tell this ***Compute Node*** how to connect to your ***Control Root Computer*** by providing the ***Fixed IP Address*** of the ***Control Root Computer*** that you set up earlier. For our example, the IP address is 192.168.58.5.

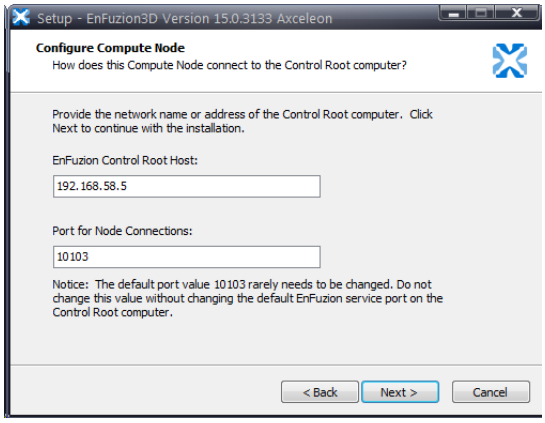
Setup - EnFuzion3D Version 15.0.3133 Axceleon
Configure Compute Node
How does this Compute Node connect to the Control Root computer?
Provide the network name or address of the Control Root computer. Click Next to continue with the installation.
EnFuzion Control Root Host:
192.168.58.5
Port for Node Connections:
10103
Notice: The default port value 10103 rarely needs to be changed. Do not change this value without changing the default EnFuzion service port on the Control Root computer.
< Back
Next >
Cancel

Figure 4-16: Configure the Compute Node with Control Root Computer IP Address

If you encounter an error message as shown in ***Figure 4-17***, it is because a previously installed ***EnFuzion Root Service*** process is still running on this machine. You need to stop it before proceeding. You can stop this process from the ***Windows Task Manager***.

It is a good idea to stop all running EnFuzion processes using the ***Windows Task Manager*** before you install a new version of EnFuzion3D. All the EnFuzion processes are shown in ***Figure 4-18*** below. More details on how to upgrade an existing installation are in ***Chapter 6 Upgrading a Previous Installation of EnFuzion3D***..

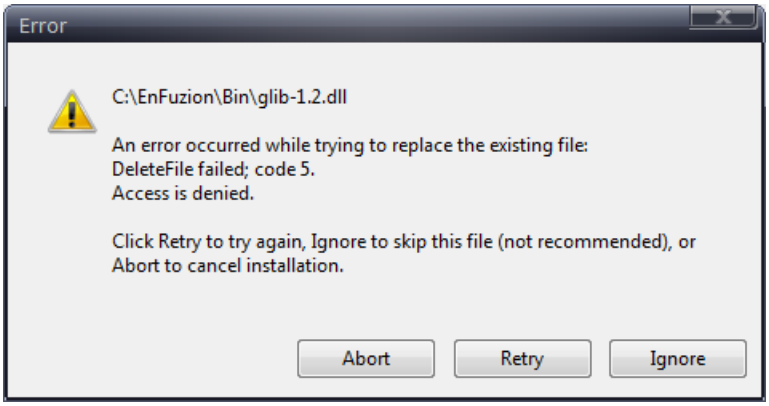

Figure 4-17: Stop Previously Installed Processes

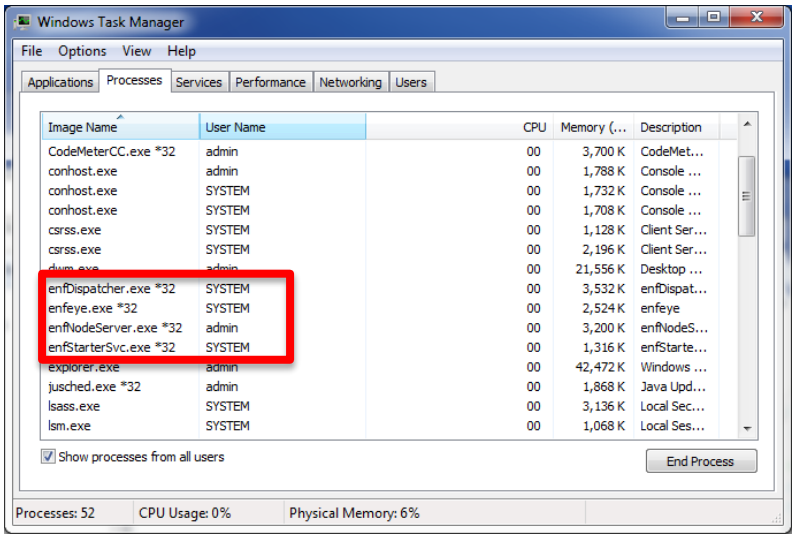
Windows Task Manager
File Options View Help
Applications Processes Services Performance Networking Users
Image Name User Name CPU Memory (... Description
CodeMeterCC.exe *32 admin 00 3,700 K CodeMet...
conhost.exe admin 00 1,788 K Console ...
conhost.exe SYSTEM 00 1,732 K Console ...
conhost.exe SYSTEM 00 1,708 K Console ...
csrss.exe SYSTEM 00 1,128 K Client Ser...
csrss.exe SYSTEM 00 2,196 K Client Ser...
dwm.exe admin 00 21,556 K Desktop ...
enfDispatcher.exe *32 SYSTEM 00 3,532 K enfDispat...
enfeye.exe *32 SYSTEM 00 2,524 K enfeye
enfNodeServer.exe *32 admin 00 3,200 K enfNodeS...
enfStarterSvc.exe *32 SYSTEM 00 1,316 K enfStarte...
explorer.exe admin 00 42,472 K Windows ...
jusched.exe *32 admin 00 1,868 K Java Upd...
lsass.exe SYSTEM 00 3,136 K Local Sec...
lsm.exe SYSTEM 00 1,068 K Local Ses...
Show processes from all users
End Process
Processes: 52 CPU Usage: 0% Physical Memory: 6%

Figure 4-18: EnFuzion Processes

Step 5: Complete the installation and ask the setup wizard to start the ***EnFuzion Compute Node service*** upon completion of installation.

Note that your ***Computer Node*** has been configured to automatically connect to the ***Control Root Computer*** after the installation is completed, and after each time you boot/restart the machine. Verify that the ***Compute Node*** is connected successfully to the ***Control Root Computer*** using the ***EnFuzion Web Interface***, as shown in ***Figure 4-19***. You may have to wait for up to two minutes for the ***Compute Nodes*** to connect to the ***Control Root Computer***.

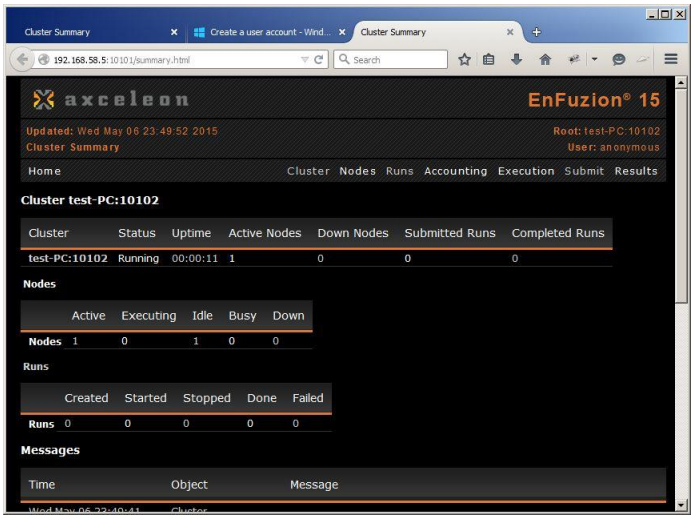

Figure 4-19: Confirm the New Computer Node Is Running

4.9.3 EnFuzion Node Start-up Script for Windows-based Compute Nodes

EnFuzion3D provides a convenient way for users to configure the ***Compute Nodes*** each time when they are started or restarted. You can do this by creating a ***Node Start-up Script*** for each ***Compute Node***. This is especially import when the ***Compute Nodes*** need to mount a ***Shared File Repository*** so that they can access project directories and image directories.

Please note the following requirements for an ***EnFuzion Node Start-up Script:***

- It must be named ***startup.bat***
- It must be placed in the <EnFuzion3D_Installation_Directory>/bin directory on each Compute Node
- The script must conform in syntax to a Windows batch file

You can find an example ***startup.bat*** in the ***<EnFuzion3D_Installation_Directory>/bin*** directory. Please modify this file to adapt it for your environment.

After you make any changes to a ***startup.bat*** file on a ***Compute Node***, you must restart the ***EnFuzion Node Service*** on that ***Compute Node***. To do this:

- Choose Windows Start➔All Programs➔EnFuzion➔***Compute Node Utilities***, from there
- Stop EnFuzion Node Service,
- Register EnFuzion Node Service, and finally
- Start EnFuzion Node Service

4.10 Test Drive EnFuzion3D

If you are installing EnFuzion3D for the first time, and you have followed the steps as we suggested above, by now you have a ***Three-machine Render Farm***. Follow the steps in this section to take your miniature render farm on a test drive.

Our simple test here uses Maya 2015 to illustrate how EnFuzion3D works with rendering packages. Axceleon provides application plug-ins for EnFuzion3D for most popular rendering packages. By installing the EnFuzion3D software, you have installed all supported plug-ins. To get full information on the application plug-ins for EnFuzion3D, please consult the ***EnFuzion3D User Guide***.

Follow these steps to take your three-machine render farm on a test drive.

Step 1: Setting up file sharing

If you have at least one remote ***Compute Node***, you ***must*** first set up ***file sharing*** between your ***User Submit Computer*** and your Compute ***Nodes*** so that your ***Compute Node*** can read your scenes, your project files and store rendered images.

There are two ways to set up file sharing:

- ***Shared File Repository*** – A render farm manager sets up a file server to hold all the scenes, project directories and images directories for all the users and computers on a render farm. If you are a render farm administrator and want to set up a ***Shared File Repository***, please refer to ***Chapter 4 Setting up File Sharing***.

- ***Simple File Sharing*** – You manually share your own project directories and images directories, so that you can use distributed rendering ***without*** a render farm wide ***Shared File Repository***. Refer to ***Simple File Sharing*** section in ***Chapter 4 Setting up File Sharing***.

Distributed rendering will fail without functional file sharing. Please make sure before you submit your first test scene.

Step 2: Login as a render farm user

- On a ***One-Machine Render Farm***, you can do the tests as the ***Administrator*** user.

- On a ***Three-Machine Render Farm***, log on to the ***User Submit Computer*** as if you're an artist.

Step 3: Start **EnFuzion3D Desktop** and Select Maya as shown in ***Figure 4-20***.

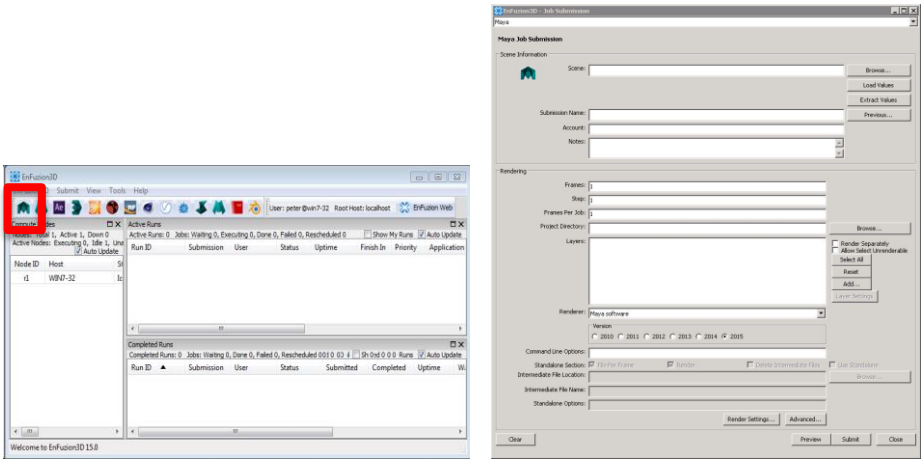

Figure 4-20: EnFuzion3D Desktop and Maya Job Submission Interface

Step 4: Use a ***Scene*** you have successfully rendered before, fill out the ***Job Submission Parameters***.

- Provide Scene, Project Directory and Frames information
- Click ***Render Settings*** as shown in ***Figure 4-21*** to set the ***Image Directory***, which is the destination of rendered images. Click on ***Apply*** to continue.
- Click ***Submit*** to submit the scene

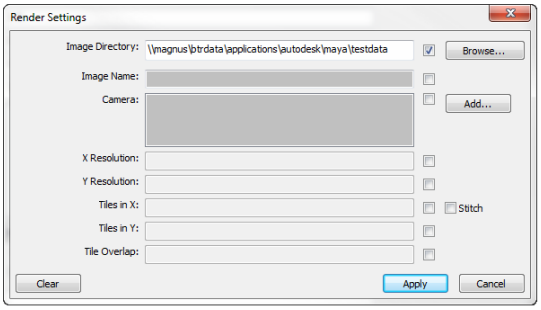

Figure 4-21: Enter Render settings

Each submission corresponds to an EnFuzion3D ***Active Run*** with its own ***Run ID***, as shown in ***Figure 4-22***. You monitor the rendering progress using the ***EnFuzion3D Desktop***.

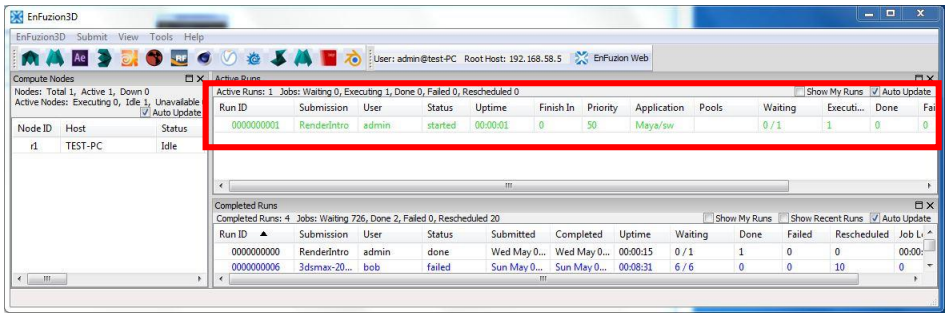

Figure 4-22: Monitoring Rendering Progress

Once rendering completes, an ***Active Run*** become a ***Completed Run***, as shown in ***Figure 4-23.*** You can get more information on by clicking on the ***Run ID*** of your ***Run***.

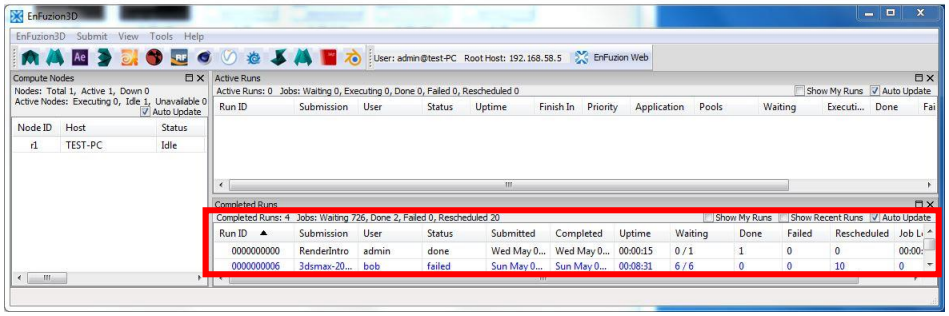
EnFuzion3D
EnFuzion3D Submit View Tools Help
User: admin@test-PC Root Host: 192.168.58.5 EnFuzion Web
Compute Nodes
Nodes: Total 1, Active 1, Down 0
Active Nodes: Executing 0, Idle 1, Unavailable 0
Auto Update
Node ID Host Status
r1 TEST-PC Idle
Active Runs
Active Runs: 0 Jobs: Waiting 0, Executing 0, Done 0, Failed 0, Rescheduled 0
Show My Runs Auto Update
Run ID Submission User Status Uptime Finish In Priority Application Pools Waiting Executi... Done Fai
Completed Runs
Completed Runs: 4 Jobs: Waiting 726, Done 2, Failed 0, Rescheduled 20
Show My Runs Show Recent Runs Auto Update
Run ID Submission User Status Submitted Completed Uptime Waiting Done Failed Rescheduled Job Li
0000000000 RenderIntro admin done Wed May 0... Wed May 0... 00:00:15 0 / 1 1 0 0 00:00:
0000000006 3dsmax-20... bob failed Sun May 0... Sun May 0... 00:08:31 6 / 6 0 0 10 0

Figure 4-23: View Completed Run Information

For more information on how to use the ***EnFuzion3D Desktop*** consult the ***EnFuzion3D User Guide***.

If you cannot successfully render a scene with on your ***Three-machine Render Farm***, consult the ***EnFuzion3D User Guide, Chapter 2*** for tips on how to troubleshoot the distributed rendering process.

4.11 Next Steps

After you have successfully rendered some scenes with your three-machine render farm, you are ready to install EnFuzion3D on more render nodes and artist workstations.

4.12 Batch Installation

You can batch install EnFuzion3D on many ***Submit Computers*** or ***Compute Nodes*** at a time using command line scripts. This is recommended only after you have successfully installed and tested a minimal, three-machine configuration. Please contact ***support@axceleon.com*** for the batch installation scripts.

4.13 Troubleshooting Installation Problems

Please refer to ***Section 3.6 Trouble Shooting Installation Problems*** for how to overcome the most common installation problems.

More diagnostic tips and solutions for these problems can be found on-line, at ***http://www.enfuzion3D.com/faq.html***.

4.14 Uninstalling EnFuzion3D

This section provides information on how to uninstall ***EnFuzion3D.*** Please note that there is no need to uninstall ***EnFuzion3D*** prior to an upgrade, unless Axceleon specifically tells you otherwise.

To uninstall ***EnFuzion3D*** on the ***User Submit Computers***:

- Choose Windows➔Start➔All Programs➔EnFuzion➔***Uninstall EnFuzion***.

To uninstall ***EnFuzion3D*** on the ***Control Root Computer***:

- Choose Windows➔Start➔All Programs➔EnFuzion➔Control Root Utilities➔***Stop EnFuzion Root*** Service,
- Choose Windows➔Start➔All Programs➔EnFuzion➔Control Root Utilities ➔***Unregister EnFuzion Root Service***, and
- Choose Windows➔Start➔All Programs➔ EnFuzion ➔***Uninstall EnFuzion***.

To uninstall ***EnFuzion3D*** on the ***Compute Nodes***:

- Choose Windows➔Start➔All Programs➔ EnFuzion ➔Compute Node Utilities➔***Stop EnFuzion Node Service***,
- Choose Windows➔Start➔All Programs➔ EnFuzion ➔ Compute Node Utilities ➔***Unregister EnFuzion Node Service***, and
- Choose Windows➔Start➔All Programs➔ EnFuzion ➔***Uninstall EnFuzion***.

4.15 Additional Resources for Render Farm Administrators

For render farm administrators to have a complete understanding of the EnFuzion software, the underlying technology for EnFuzion3D, we recommend that you also refer to the EnFuzion Manual for additional information on how to configure EnFuzion.

4.16 Next Steps

Render farm administrators and artists alike should proceed to the ***EnFuzion3D User Guide*** from here.

Chapter 5

5 Setting up File Sharing

Distributed rendering requires that all the scene files, texture files and other project files are stored at a location that is accessible by all ***Compute Nodes*** and from all the ***User Submit Computers***. Likewise, all the ***Compute Nodes*** must also be able to access a shared location to store render images. If you have at least one remote ***Compute Node***, you ***must*** first set up ***file sharing*** between your ***User Submit Computer*** and your ***Compute Nodes*** before attempting distributed rendering.

There are two ways to set up file sharing:

- ***Shared File Repository*** – A render farm manager sets up a file server to hold all the scenes, project directories and images directories for all the users and computers on a render farm.

- ***Simple File Sharing*** – You manually share your own project directories and images directories, so that you can use distributed rendering ***without*** a render farm wide ***Shared File Repository***.

This chapter provides information on how to set up file sharing.

5.1 Simple File Sharing

If you are just getting started, or that you have a small render farm, ***Simple File Sharing*** is a good choice. It can be set up in just a few minutes, and it will enable distributed rendering ***without*** a render farm-wide ***Shared File Repository***, which may require a system administrator to set up.

The concept is very simple - all you need to do is to share your entire ***Project Directory*** on your own computer, including the ***Image Directory***. On Windows 7, sharing a folder is easily done with these two simple steps:

- Locate your ***Project Directory*** and ***Image Directory,*** choose the ***Share With*** menu, shown in ***Figure 5-1***,
- Choose the user from the list of users that your rendering software and EnFuzion3D runs under,
- Grant that user **Read/Write** rights.

This enables all ***Compute Nodes*** to ***read Scene*** files from your shared drive and ***write*** the rendered ***Images*** back.

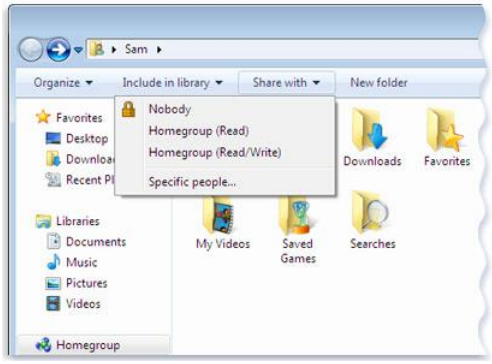

Figure 5-1: Share Project Directory

5.2 File Sharing with Samba

SMB is the default file sharing protocol implemented by Windows. Samba is the most commonly used file-sharing program that mimics the SMB protocol on Linux and Mac OS X platforms. Samba, therefore, allows machines, which run Linux and Mac OS X to share files with Windows machines using the SMB protocol.

Most likely you already have Samba and SMB because:

- Samba is distributed with most Linux and Mac OS X software distributions
- You have SMB by default on Windows

The instructions and examples in this guide show you how to set up and configure file sharing with SMB and Samba. If you wish to use another file sharing protocol such as NFS, please contact Axceleon.

For more information on Samba or to download it, please visit www.samba.org.

5.3 Setting up a Shared File Repository – Summary of Steps

Recall that a typical EnFuzion3D managed render farm consists of the following parts as shown in ***Figure 5-2*** below.

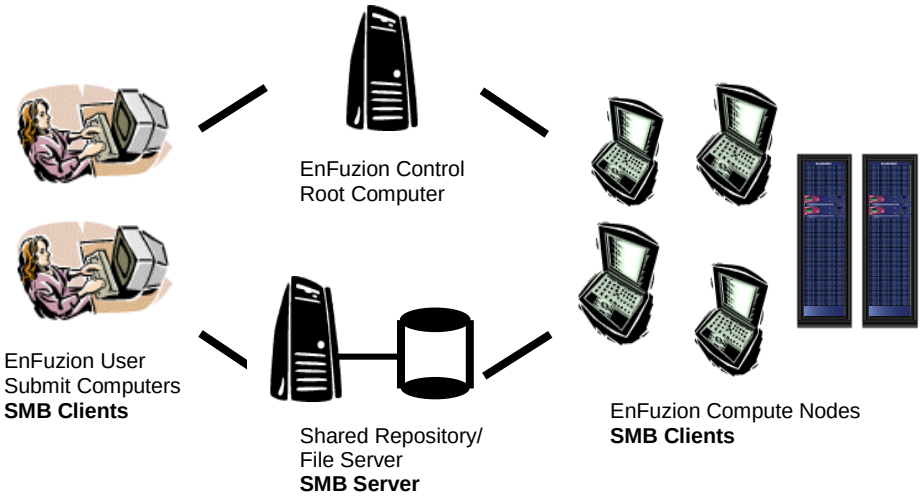

Figure 5-2: Typical EnFuzion3D Managed Render Farm

To set up the ***Shared File Repository***, you need to do the following:

- Configure the ***SMB Server*** that runs on the ***Repository/File Server*** machine
- Configure the ***SMB Clients***, which run on the ***Submit Computers*** and the ***Compute Nodes***

On heterogeneous render farms, the ***SMB Server*** and ***Clients*** run on different operating systems. Please see below for instructions on how to configure ***SMB Servers*** and ***Clients*** on Windows, Linux and Mac OS X platforms.

5.4 Configuring File Sharing on Windows Based Computers

This section provides the information on configuring Windows machines for SMB based file sharing, including:

- How to enable file sharing on a Windows ***SMB Server***, and
- How to configure Windows based ***SMB Clients*** on ***User Submit Computers*** and the ***Compute Nodes***

Please see below for details.

5.4.1 Configuring a Windows SMB Server for File Sharing

Microsoft provides extensive help information on how to set up file sharing on various versions of Windows and Windows Server operating systems. Please visit the Microsoft support Web site for information on configuring file sharing.

5.4.2 Configuring a Windows Based SBM Client on an EnFuzion User Submit Machine

On a Windows based ***User Submit Computer*** you do not need to do anything to enable a ***SMB Client***.

Once a ***SMB Server*** has been properly configured, verify that you can access shared files in your ***Shared File Repository*** by selecting ***Windows->Start->Network*** on the ***User Submit Computer.***

5.4.3 Configuring a Windows Based SMB Client on an EnFuzion Compute Node

On a Windows based ***Compute Node*** you do not need to do anything to enable a ***SMB Client***.

Once a ***SMB Server*** has been properly configured, verify that you can access shared files in your ***Shared File Repository*** by selecting ***Windows->Start-> Network*** on the ***Compute Node.***

5.4.4 For All-Windows Users Only

For all-Windows users, it is possible to start without a central ***Shared File Repository***. Please see the section above titled Simple File Sharing to see how.

5.5 Configuring File Sharing on Linux Based Computers

This section provides the information on configuring Linux machines for SMB based file sharing, including:

- How to enable file sharing on a Linux based ***SMB Server***, and
- How to configure Linux based ***SMB Clients*** on ***User Submit Computers*** and the ***Compute Nodes***

Please see below for details.

5.5.1 Configuring a Linux SMB Server

The steps to enable file sharing on a Linux ***SMB Server*** are beyond the scope of this guide. Please contact your systems administrator or contact Axceleon if you have questions on how to set up a Linux server for file sharing.

5.5.2 Configuring a Linux Based SMB Client on an EnFuzion Compute Node

To configure a ***SMB Client*** on a Linux based ***Compute Node,*** please follow the steps below:

Step 1: Login as a ***root super user*** and create a mount point with the following command:

```
mkdir -p /mnt/<share_name>
```

Step 2: Create a share description in the ***/etc/fstab*** file on the ***Compute Node*** by adding the following line to the file:

```
//<server_name>/<share_name> /mnt/<share_name> smbfs \
username=enfuzion,password=<password>,uid=enfuzion,gid=enfuzion 0 0
```

Example: We have a ***Shared File Repository*** located on the machine //***192.168.0.160/SharedRepository***. We wish to mount this Shared File Repository from an EnFuzion Compute Node, using the directory ***/mnt/SharedRepository***.

To accomplish this, create a ***/etc/fstab*** file on the ***Compute Node*** and add the following line:

```
//192.168.0.160/SharedRepository /mnt/SharedRepository smbfs
\   username=enfuzion,password=enfuzion,uid=enfuzion,gid=enfuzion 0 0
```

Step 3: Mount the new share with the following command:

```
mount /mnt/<share_name>
```

Step 4: Confirm the SMB mount with the following steps:

- Log in as ***enfuzion***
- From a command prompt, type: **cd /mnt/<share_name>**, and confirm that files can be read from and written to the ***Shared File Repository***.

5.5.3 Configuring a Linux SMB Client on an User Submit Computer

To configure the ***SMB Client*** on a Linux based ***User Submit Computer***, please follow the steps below:

Step 1: Login as a ***root super user*** and create a mount point with the following command:

```
mkdir -p /mnt/<share_name>
```

Step 2: Create a share description in the /etc/fstab file on the Compute Node by adding the following line to the file:

```
//<server_name>/<share_name> /mnt/<share_name> smbfs \
username=enfuzion,password=<password>,uid=enfuzion,gid=enfuzion 0 0
```

Step 3: Mount the new share with the following command:

```
mount /mnt/<share_name>
```

Step 4: Confirm the SMB mount with the following steps:

- Log in using your normal user login, (not as the ***enfuzion*** user)
- From a command prompt, type: **cd /mnt/<share_name>**, and confirm that files can be read from and written to the ***Shared File Repository***.

5.6 Configuring File Sharing on Mac OS X Based Computers

This section provides the information on working with Mac OS X and SMB based file sharing, including:

- How to enable file sharing on a Mac OS X based ***SMB Server***, and
- How to configure Mac OS X based ***SMB Clients*** on ***User Submit Computers*** and the ***Compute Nodes***
- How to configure ***NFS*** based file sharing on Mac OS X

Please see below for details.

5.6.1 Configuring a Mac OS X Based SMB Server

The steps to configure a Mac OS X based Samba ***SMB Server*** for file sharing are beyond the scope of this guide. Please contact your systems administrator or contact Axceleon if you have questions on how to set up a Mac OS X based server for file sharing.

5.6.2 Configuring a Mac OS X Based SMB Client on an EnFuzion Compute Node

To configure a ***SMB Client*** on a Mac OS X based ***Compute Node,*** please follow the steps below:

Step 1: Create a mount point. Open the ***Terminal*** application and type the following command:

```
mkdir -p /mnt/<share_name>
```

Example: We have a ***Shared File Repository*** located on the machine ***\\192.168.0.160\SharedRepository***. We wish to configure a Mac OS X based ***Compute Node*** to mount this repository in the directory ***/mnt/SharedRepository***. Create a mount point with the following command:

```
mkdir -p /mnt/SharedRepository
```

Step 2: Create a share description file ***fstab*** on the ***Compute Node***. Open the ***Terminal*** application and type the following command to create the file:

```
echo <server_name>:/<share_name> /mnt/<share_name> \
url==smb://enfuzion:<password>@<server_name>/<share_name>,uid=enfuzio
n,gid=enfuzion \ 0 0 > fstab
```

Example: We have a ***Shared File Repository*** located on the machine ***\\192.168.0.160\SharedRepository***. We wish to configure a Mac OS X based ***Compute Node*** to mount this repository in the directory ***/mnt/SharedRepository***. Create an ***fstab*** file with the following line:

```
echo 192.168.0.160:/SharedRepository /mnt/SharedRepository \
url==smb://enfuzion:enfuzion@192.168.0.160/SharedRepository,
uid=enfuzion,gid=enfuzion \ 0 0 >fstab
```

Step 3: Load the share description to NetInfo with the following command in the ***Terminal***:

```
niload fstab . < fstab
```

Step 4: Reboot the machine.

Step 5: Confirm the SMB mount with the following steps:

- Login as ***enfuzion***
- Navigate to the **/mnt/SharedRepository** directory and confirm that you can read and write files in the directory.

5.6.3 Configuring a Mac OS X SMB Client on an User Submit Computer

On a Mac OS X based ***User Submit Computer,*** you do not need to do anything to enable the ***SMB Client***.

Once a ***SMB Server*** has been properly configured, you can connect to the ***SMB Server*** with the steps below:

- Select ***Finder->Go->Connect to Server…*** to open the ***Connect to Server*** dialogue window.
- In the dialogue window, enter:

  ```
  smb://<Name of the SMB server>/<share_name>
  ```

  Example: We have a ***Shared File Repository*** located on the machine with the IP ***192.168.0.160/SharedRepository***, which is running as a ***SMB Server***.

  To mount the ***Shared File Repository*** from a ***User Submit Computer***, select ***Finder->Go->Connect to Server…*** to open the ***Connect to Server*** dialogue window. In the dialogue window, enter:

  ```
  smb://192.168.0.160/SharedRepository
  ```

5.6.4 Configuring Mac OS X Based NFS Server

The simplest way to configure NFS on an Mac OS X based system is using the ***NFS Manager*** utility. You can download the ***NFS Manager*** utility from ***http://www.bresink.com/osx/NFSManager.html***.

Using the ***NFS Manager***, the steps to configuring an ***NFS Server*** on a Mac OS X based system are as follows:

- Install and start ***NFS Manager***
- Select ***NFS Shares***
- Click on the ***Lock*** and provide administrator's credentials
- Click on ***Add Entry***
- Select... ***the folder to share***
- Select ***Any computer*** (no restrictions)
- Under ***Options***, specify ***Treat all users as user enfuzion***
- Leave all other options unchecked
- Click ***OK***
- Click ***Activate Changes...***

After you configure the ***NFS Server***, test it by doing the following:

- In ***NFS Manager***, select ***List Remote NFS Shares***...
- In the ***Server*** field, type ***localhost***
- Under ***Folder***, there should be the ***shared folder***
- Under ***Options***, it should say ***mapall=enfuzion***

This completes the configuration of the ***NFS Server*** on a Mac OS X based system. This configuration must be done once on the machine that is used as a file server.

5.6.5 Configuring a Mac OS X Based NFS Client on an EnFuzion Compute Node

The simplest way to configure NFS on a Mac OS X based system is using the NFS Manager utility. You can download the NFS Manager utility from http://www.bresink.com/osx/NFSManager.html.

Using the ***NFS Manager***, the steps to configuring a ***NFS Client*** on a Mac OS X based system are as follows:

- Open ***NFS Manager***
- Verify that the ***NFS Server*** is operational
- Select ***Computer:List*** Remote ***NFS Shares***...
- Enter ***Server name***, press ***List***

- An NFS share name should be shown
- Define an ***NFS Client***
- Click on the main ***NFS Manager*** dialog
- Click on the ***Lock*** and enter credentials
- Select ***NFS Entry*** (menu at the top):***New Connection***
- Enter ***NFS Server***, ***NFS Share***
- Unselect ***Connect*** as read-only folder
- Click ***OK***, which closes the dialog
- Click ***Activate Changes***... (in the main dialog)
- Quit ***NFS Manager***

The NFS share should appear as another entry in the left column in the Finder. This configuration must be done once on each render node.

5.6.6 Configuring a Mac OS X Based NFS Client on an User Submit Computer

Please contact your system administrator on how to access a NFS server from ***User Submit Computers***

Chapter 6

6 Upgrading a Previous Installation of EnFuzion3D

This chapter provides key information on how to upgrade an existing installation of EnFuzion3D. All current users of EnFuzion3D should consult this chapter before performing an upgrade. Key topics addressed in this chapter are:

- Planning an EnFuzion3D upgrade
- Updating your EnFuzion3D license file
- Re-hosting your EnFuzion3D ***Control Root Computer***
- Managing different versions of EnFuzion3D
- Start/stop EnFuzion services
- Upgrading your EnFuzion3D installation

6.1 Planning an EnFuzion3D Upgrade

To plan for an orderly upgrade of EnFuzion3D on your render farm, please note the following recommended steps:

- Stop EnFuzion services associated with your current version of EnFuzion3D. For more detail on this, please see the section below titled ***Start/Stop EnFuzion Services***.
- Back up your current EnFuzion3D installation directory.
- It is not necessary to uninstall an older version of EnFuzion3D before updating it.
- Install a new version of EnFuzion3D on the EnFuzion ***Control Root Computer***, all the ***User Submit Computers*** and all the ***Compute Nodes***. We recommend that you always install EnFuzion3D at the same location so that your new installation will be able to find your user files at their default locations.
- The EnFuzion services associated with the new version of EnFuzion3D should be started by default during the installation process. If for any reason (blocked ports, anti-virus programs) the EnFuzion processes fail to start, you can manually start the necessary EnFuzion processes after you resolve the problems. To see how to manually start EnFuzion services, please see the section below titled ***Start/Stop EnFuzion Services***.

6.2 Updating Your EnFuzion3D License File

EnFuzion3D license files are version dependent. When you upgrade your version of EnFuzion3D, you need to contact Axceleon at ***support@axceleon.com*** to obtain a new license file.

After you receive a new license file, there are two ways to get a new version of EnFuzion3D software to work with a new license file:

- Method 1: When you install a new version of EnFuzion3D on a ***Control Root Computer***, you will be prompted for a new license file.
- Method 2: If you have already installed a new version of EnFuzion3D before you received a new license file, follow the steps below to configure your new software to use a new license file:
  - Rename the new license file to ***enflicense.txt***
  - Copy it to the ***<EnFuzion3D_Installation_Directory>/Config*** directory
  - Start the ***EnFuzion Root Service*** by choosing:

    Start➔All Programs➔EnFuzion➔Control Root Utilities➔***Start EnFuzion Root service***

6.3 Re-hosting Your EnFuzion3D Control Root Computer

Your EnFuzion3D license file is tied to your EnFuzion3D ***Control Root Computer***, or more specifically, its IP address. If you plan to re-host your EnFuzion3D ***Control Root Computer***, you will need a new EnFuzion3D license file. To obtain a new EnFuzion3D license file for your new server, please contact Axceleon at ***support@axceleon.com*** and provide us with the IP address of your new ***Control Root Computer***.

6.4 Managing Different Versions of EnFuzion3D

You should **not** mix EnFuzion services from different versions. Before installing and running a new version of EnFuzion3D on your render farm, you should ***stop*** EnFuzion services on all the machines that ran an older version of the software. Once you have successfully upgraded your installation, you can then start the EnFuzion services associated with the new version of the software.

6.5 Start/Stop EnFuzion Services

On the Windows platform, the ***EnFuzion Root Service*** consists of two processes, ***enfDispatcher.exe*** and ***enfeye.exe***. The ***EnFuzion Node Service*** has 2 processes, ***enfNodeServer.exe*** and ***enfStartersvc.exe***.

To manually start or stop EnFuzion services on the Windows platform, follow the steps below:

EnFuzion Services (Windows)	Start Service	Stop Service
EnFuzion Root Service: • enfDispatcher.exe • enfeye.bin.exe	• Start ➔All Programs ➔ EnFuzion ➔ Control Root Utilities ➔ Register EnFuzion Root Service • Start ➔All Programs ➔ EnFuzion ➔ Control Root Utilities ➔ Start EnFuzion Root Service	• Start ➔All Programs ➔ EnFuzion ➔ Control Root Utilities ➔ Stop EnFuzion Root Service
EnFuzion Node Service: • enfNodeServer.exe • enfStartersvc.exe	• Start ➔All Programs ➔ EnFuzion ➔ Control Root Utilities ➔ Register EnFuzion Node Service • Start ➔All Programs ➔ EnFuzion ➔ Control Root Utilities ➔ Start EnFuzion Node Service	• Start ➔All Programs ➔ EnFuzion ➔ Control Root Utilities ➔ Stop EnFuzion Node Service

Table 6-1: Start/Stop EnFuzion on Windows platform

6.6 Upgrading your EnFuzion3D Installation

On the Windows platform, the graphical installer will prompt you to upgrade your installation of EnFuzion3D if an older release is detected on your machine. You should install the new version of EnFuzion3D at the same location as your old version so that all of your user configurations files will be used by the new version of EnFuzion3D. The new EnFuzion3D configuration files will be created with a .new extension. You can decide when you want to upgrade to the new version of configuration files.

6.7 Additional Information

For addition information on EnFuzion, please refer to the ***EnFuzion User Manual***. For technical support, please contact Axceleon at ***support@axceleon.com***.